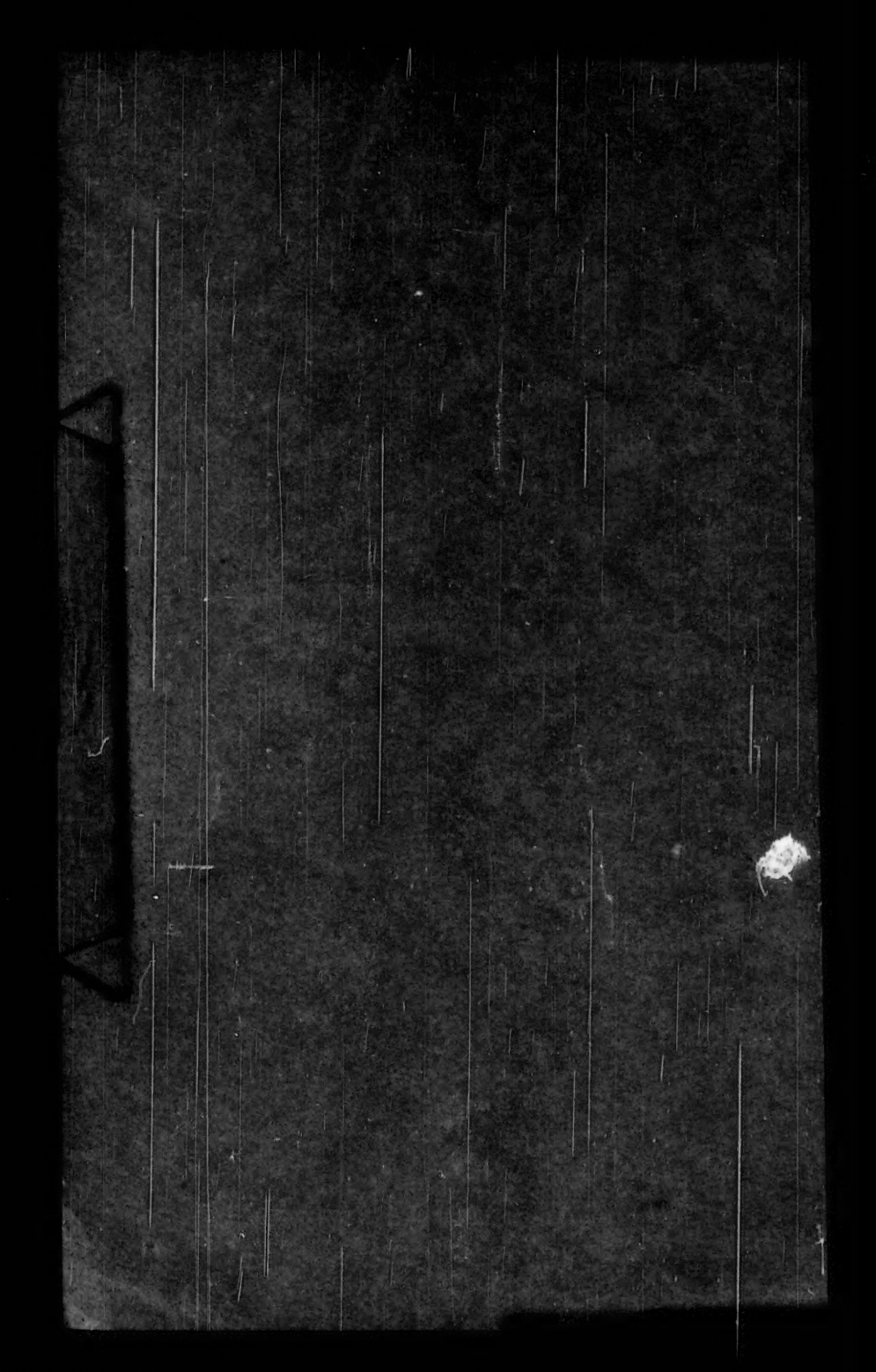

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ABSTRACTS

(The titles which are set in bold-face are intended as "scanning titles" for ease in classifying and filing. Where these are not substantially the authors' titles the exact titles are set in parentheses.)

1—FIBRES AND THEIR PRODUCTION

(B)—ANIMAL

Silkworms: Effect of Nitrites in Diet. ("Conversion of Nitrites into Oximes in Silkworms and its Relation to the Experimental Production of Virus Disease.") Kazuo Yamafuji. *Nature*, 1950, **165**, 651-652. Silkworms have been fed on mulberry leaves moistened with K or Na nitrite solution; 46 per cent. of the worms died of jaundice virus disease. The oxime content of treated worms was about seven times that of the untreated. The feeding of nitrates and ammonium salts also causes an increase in the amount of oxime in the silkworm. C—**1B.**

Wool Fibre Surface: Electron Microscopy; Replica Techniques. K. R. Makinson. *Text. Res. J.*, 1950, **20**, 22-28. Techniques are described for making replicas, suitable for examination in the electron microscope, of the surface of the wool fibre without subjecting the fibre to heat or pressure. These include collodion-silica and gelatine-collodion replicas. Several electron micrographs of normal wool fibres and of fibres subjected to various chemical and mechanical treatments are included. It is confirmed that the scales consist of a smooth layer over-lying a more resistant furrowed structure. Other features of the scales, including a "fringed" edge, were also observed, and results indicate that the longitudinal striations on the scales are an integral part of the structure. W—**1B.**

(C)—VEGETABLE

African Cotton Insect Pests and Diseases. ("Field Key to the Principal Disorders of Cotton in Africa.") E. O. Pearson. *Empire Cotton Growing Rev.*, 1950, **27**, 10-15. A key to the principal insect pests and diseases attacking cotton in Africa is presented under the headings: (i) Seedlings; (ii) Whole plants; (iii) Stems and branches; (iv) Leaves; (v) Flower buds; (vi) Flowers; (vii) Green bolls; and (viii) Mature bolls. In each case the symptoms are described, followed by the name of the pests causing the disorder. C—**1C.**

American Cotton Crop, 1949: Statistical Analysis. U.S. Department of Agriculture, Production and Marketing Administration, Cotton Branch. *Textile Weekly*, 1950, **45**, 1040. The American crop of 1949, ginned, amounted to 15,896,778 bales of Upland and 3,724 bales of American-Egyptian cotton. The supply (crop + carry-over) is about 21,113,000 bales. The Upland crop and carry-over are analysed by grade and staple length, figures for 1948 also being given in the table. The proportion of high-grade cottons has reached the lowest figure for some years and the proportion of Strict Low Middling and Low Middling has risen sharply. The average staple length was one inch exactly. C—**1C.**

World Raw Cotton Supply: Prospects, 1949-1950. Dudley Windel. *Empire Cotton Growing Rev.*, 1950, **27**, 34-40. A preliminary survey is made of the prospects for world raw cotton production and consumption in the 1949-50 season. Carry-over production and consumption figures estimated for this season are given for individual countries. World cotton production is expected to show a small rise but consumption will change little. C—**1C.**

Flax: Retting; Relationship of Fibre Quality to Bacterial Flora. G. W. Lanigan. *Nature*, 1950, **165**, 516-517. The relationship of fibre quality to bacterial flora in flax retting is discussed with respect to Belgian- and Australian-grown flax. The superior quality of Belgian flax is attributed to the bacteria

responsible for the retting, namely pigmented species of the genus *Clostridium*. These bacteria are not plentiful in Australian retting waters, but when introduced, the quality of this flax is raised. **C—1C.**

Cyprus Cotton: Production. ("The White Gold of Cyprus.") A. S. Pearse. *Countryman (Cyprus)*, 1950, **4**, No. 3, 11. Brief comment is made on the good market prospects for Cyprian cotton growers caused by the shortage of dollars in European sterling countries. The adoption of more modern methods of cultivation is urged. **C—1C.**

Cotton: Breeding in Arizona, 1946/47. *58th Ann. Rept. Arizona Agric. Expt. Station* (through *Plant Breeding Abstr.*, 1949, **19**, 486). Progeny rows of five new hybrid strains were grown. Two are crosses between Santan Acala and New Mexico 1517, two are back-crosses of Santan on Santan × N.M.1517, and the fifth is a cross between Santan and Stoneville 2B. All have slightly longer and much stronger fibre than Santan. The yarns of two of the new strains which were subjected to spinning tests were superior to that of Santan. Progenies of multiple crosses of S × P, Tangüis, Sea Island and Upland made in order to obtain strong fibre, larger bolls, smaller plant size, and increased earliness were grown in comparison with the standard variety, S × P. Twenty-six of them are distinctly superior to S × P in earliness, productiveness, and plant type. Considerable progress has been made in establishing strains with larger bolls than S × P. **C—1C.**

Cotton: Breeding in Georgia, 1947/48. *60th Ann. Rept. Georgia Expt. Station*, (through *Plant Breeding Abstr.*, 1949, **19**, 483). Selfed lines of "Empire" cotton showing the highest degree of resistance to wilt and the best yielding capacity are now used in the production of commercial supplies of foundation seed. The result of variety tests at several locations are summarised. CSS 3720, a wilt-resistant variety developed by crossing Clevewilt and Stoneville and back-crossing to Stoneville, has given good results in the trials; seed is not yet available for distribution. **C—1C.**

Cotton in Greece: Varietal Tests. B. G. Christidis. *Sci. Bull. Cotton Res. Inst. Sindos, Greece*, 1949, No. 2, 94 pp. (through *Plant Breeding Abstr.*, 1949, **19**, 599). Varietal tests are being carried out by the Cotton Research Institute in various cotton growing areas of Greece. They are concerned chiefly with *G. hirsutum* types, some Egyptian varieties, selections from imported seed or local populations and various hybrids. Only statistically significant results are dealt with. The characteristics usually considered are yield, ginning outturn, lint length, earliness, boll weight and money value. Data for 1938 to 1946 are reported in detail. Some of the recent selections excelled all others, while imported cottons with the exception of the Upland variety Carolina Foster proved to be devoid of any practical importance for the Greek farmer. By crossing Carolina Foster with Egyptian Sakellaridis an Upland type, 53D, with excellent lint like the Egyptian cotton and good productivity was obtained. But it is late as compared with American cotton and has a low lint percentage never exceeding 32. In agreement with results obtained elsewhere, yield and earliness proved more variable under different environmental conditions than did lint per cent. or lint length. Descriptions are given of the six most important of the strains bred by selection from two local seed mixtures, one consisting of American Upland types periodically imported during the last 80 years and the other of American types which have probably been naturally crossed with Egyptian varieties. Observations on three types of selections from Carolina Foster are also included. The most promising strains for conditions in Greece are the selections from local seed. **C—1C.**

Cotton Plants: Causes of Changeability. D. V. Ter-Avanesjan. *Proc. Lenin Acad. Agric. Sci. U.S.S.R.*, 1949, No. 1, 23-25 (through *Plant Breeding Abstr.*, 1949, **19**, 597). In Russian experiments deformed seed capsules of the cotton varities S-15, S-3316, 8802-1, 9621 and 133 f have been separated from the normal capsules for comparisons between the plants grown from the normal and deformed seeds. The F_1 from the deformed seed showed appreciable differences from the normal varietal plants regarding such characters as raw cotton yield and number of seed capsules per plant, number of seeds per capsule, length of fibre and height of the plants. The offspring of the experimental plants remained uniform in the second and third year, and retained a definite complex of hereditary characters which distinguished them from the initial variety. The

most marked morphogenetical differences were seen between the initial varieties 962 and 133 f and the plants grown from their deformed seed. Comparative descriptions of these are given. C—**1C.**

Cotton Plant Defoliation Agents: Tests, 1948. E. L. Thaxton and D. L. Jones. *Texas Agric. Expt. Sta., Progress Rept.*, 1949, No. 1182, 4 pp. (through *Chem. Abstr.*, 1950, **44**, 2162[f]). Results of defoliation tests in 1948 are reported. When no dew was present good defoliation required the use of a spray material. Hygroscopic dusts were not dependable during periods of low humidity. The best defoliation was obtained with mono-sodium cyanamide at 20 lb./acre as a spray applied at 12·5 gallons/acre. The addition of 1 per cent. wetting agent (Vatsol OT) in the spray material to improve coverage and penetration showed good results. Under severe conditions where high concentration sprays were needed to cause defoliation, there was little difference in varietal response to defoliation. A very narrow margin existed in the amounts of ammonium thiocyanate and potassium cyanate that caused good defoliation; an overdose resulted in freezing the leaves to the plant, and an under-dose gave poor defoliation. C—**1C.**

Cotton Plant: Injury by Insecticides. J. Barbe. *Rev. hort.* (Paris), 1949, **121**, 109 (through *Chem. Abstr.*, 1950, **44**, 1220[b]). Emulsions containing 0·05 per cent. DDT and 0·3 per cent. of linseed oil injured 25 per cent. of the leaves of cotton and other crops. C—**1C.**

Cotton Boll Weevil: Control. L. C. Fife, R. L. Walker and F. F. Bondy. *J. Econ. Entomol.*, 1949, **42**, 682-684; 685-686 (through *Chem. Abstr.*, 1950, **44**, 1219[e]). (1) Results of small- and large-plot dusting experiments with DDT, benzene hexachloride, Toxaphene, Chlordan, and Parathion against boll weevil are reported. The compositions of the most efficient dusts for weevil control are given. Parathion at 0·5 per cent. was not sufficient for good control of red spider on cotton. (2) The effectiveness of chlorinated hydrocarbons against boll weevils, as determined by the average number of weevils dead or paralysed in 168 hours, is compared. C—**1C.**

Cotton Boll Weevil: Insecticides Control Tests during 1948. J. C. Gaines and H. A. Dean. *J. Econ. Entomol.*, 1949, **42**, 795-798 (through *Chem. Abstr.*, 1950, **44**, 1640[g]). A special calcium arsenate (free from lime) mixed either with Parathion or benzene hexachloride and 20 per cent. Toxaphene-S were equally effective against boll weevil on cotton, and better than benzene hexachloride-DDT-S mixture or Chlordan-DDT-S mixture. C—**1C.**

Red Spider Mites: Control. Wm. Iglinsky and J. C. Gaines. *J. Econ. Entomol.*, 1949, **42**, 703-705 (through *Chem. Abstr.*, 1950, **44**, 1219[b]). Parathion dusts (0·5 per cent. or more Parathion) effectively controlled the mite, *Septanychus* sp., on cotton plants but lacked residual and ovicidal properties. Dinitro-*o*-cyclohexyl phenate dust (1·5 per cent.) was ineffective, probably because of poor dusting quality. Sulphur at 18 lb./acre gave as good control as and longer residual action than the other materials. Bis-(*p*-chlorophenoxy-methane failed. C—**1C.**

Ramie: Processing. ("Ramie: An Old Fibre With New Potentialities.") G. H. Hoffman. *Textile Manufacturer*, 1950, **76**, 172-173, 193. The cultivation, properties and processing of ramie are briefly described with particular reference to recent developments. Samples of ramie and ramie/wool fabrics are shown. C—**1C.**

(D)—ARTIFICIAL

Hemicelluloses: Behaviour in the Mercerisation Stage of the Viscose Process. ("Über Hemizellulose bei der Alkalisierung.") R. Gaebel. *Kunstseide u. Zellwolle*, 1949, **27**, 307-309. Results are reported of experiments on the behaviour of five different pulps in the mercerisation stage of the viscose process. The hemicellulose content of the steeping alkali was about 9 g. per l. The hemicellulose determinations were carried out by the chromic acid method, and distinctions were made between hemicelluloses originating from the same pulp and those which had come into the steeping alkali from previous pulps. The amount of hemicellulose dissolved varied between 90 and 50 per cent. and its distribution between the yellow lye and the expressed lye is quite different for the different pulps. All pulps are sensitive to the presence of foreign hemicellulose in the steeping alkali. C—**1D.**

Rayon Yarn: Continuous Production. ("Das Kontinuespinnverfahren zur Herstellung von Kunstseide.") H. Jentgen and H. Busath. *Kunstseide u. Zellwolle*, 1949, **27**, 275-283. The development of continuous rayon spinning processes in the United States, England, and Germany is briefly reviewed, and illustrated descriptions are given of (i) the spinning machine of the Industrial Rayon Corporation, (ii) Dr. Mothwurf's arrangement providing for the after-treatment of viscose rayon on a single instead of several cylinders, (iii) the Nelson spinning process developed by Dobson and Barlow Ltd., and (iv) the process suggested by Kuljian. The problem of drying is briefly discussed and the economy of the various processes is compared. C—**1D.**

Cuprammonium Rayon Spinning Process: Development. ("Die Entwicklung der Kupferkunstseide.") *Kunstseide u. Zellwolle*, 1949, **27**, 267-275. A brief review is given of the development of cuprammonium rayon since Schweitzer's discovery in 1857 that cellulose is soluble in an ammoniacal solution of copper hydrate. The recovery of the solvents used in the spinning process is discussed; the introduction of exchange resins has led to a commercial recovery of 99 per cent. of the copper, and by means of a German patented process about 90 per cent. of the ammonia may be recovered. The main recent development in the actual spinning is the improvement in the production of twist-free yarns. Attempts to simplify the spinning machinery have resulted in the development by Messrs. Bemberg of the "Continue" machine in 1934 and of the "Dureta" machine in 1944. The latter is described and illustrated. Finally, reference is made to investigations aiming at the perfection of the physico-chemical spinning process itself. C—**1D.**

Cuprammonium Rayon: Stretch-spinning; Mechanism. Viktor Elsaesser. *Kolloid Z.*, 1949, **113**, 37-53 (through *Brit. Abstr.*, 1950, B II, 51). The variation in fibre cross-section structure of cuprammonium rayon filaments from their "optimum" state after leaving the spinnerets at the top of the funnel up to their emergence from the funnel end is discussed in relation to mathematical arguments developed to determine the dependence of the strength of visco-plastic materials on the mechanical treatment of the material. The limiting strength of the rayon depends on the cross-section non-homogeneity of the filaments in the optimum state which, in turn, depends on the frictional forces between the spinning filament and water. Although optimum conditions for obtaining strong filaments can be laid down, their practical attainment is difficult. Very high strengths can be obtained by increasing the tensile stress during spinning and reducing frictional forces. In this way a well-orientated, compact structure is obtained. (See also *J. Textile Institute*, 1950, **41**, A280.) C—**1D.**

Zein Filaments: Stabilization with Formaldehyde. C. B. Croston. *Ind. Eng. Chem.*, 1950, **42**, 482-484. A curing process for the stabilization of zein filaments consists essentially of treatment with a mixture of an inert solvent, aldehyde (usually formaldehye) and strong acid. The cure is very rapid at 100° C. and produces irreversible formaldehyde cross-links. The stabilization is most evident in the reduction of shrinkage which is reflected in unusual strengths of the fibre after boiling in acid dye baths. Some facts are cited in support of the view that tyrosine is involved in at least part of the curing mechanism. C—**1D.**

Nylon: Development, Preparation and Application. ("Nylon-Entwicklung, Herstellung und Verwendung.") —. Söhngen. *Kunstseide u. Zellwolle*, 1949, **27**, 283-286. The synthesis and commercial production of nylon are briefly described and mechanical properties of ordinary and stretched nylon are tabulated. The moisture absorption of nylon is compared with that of other textile fibres, and figures are given showing the lengthwise contraction of nylon when treated with hot water or steam. The resistance of nylon against microbiological attack, chemicals, and other agencies is discussed. Numerous possibilities for the application of nylon for items of clothing, household goods and in industry are mentioned. C—**1D.**

Perlon: Preparation. ("Über Perlon.") L. Schulhof. *Kunstseide u. Zellwolle*, 1949, **27**, 287-288. A brief description is given of the steps involved in the preparation of Perlon from phenol. C—**1D.**

Artificial Fibres: Development. A. Zart. *Chem.-Ing.-Tech.*, 1949, **21**, 305-312 (through *Brit. Abstr.*, 1950, B II, 49). A review of recent technical and scientific progress dealing, *inter alia* with the Nelson continuous viscose process, cupram-

monium and acetate rayons, and polyvinyl (PeCe, Vinyon, Saran, Orlon) and poly-condensate (nylon, Perlon T, L, and U, and Terylene) synthetic fibres. Polymer research appertaining to fibres is reviewed, and some physical and chemical properties of silk, cotton, wool, and several regenerated and synthetic fibres are tabulated. There are 72 references to the literature. C—1D.

"Rayon": Definition. A. G. Scroggie. *Textile Research J.*, 1950, **20**, 194-198. Proposals that have been made concerning the use of the term "rayon" and also the adoption of a suitable family name for "man-made" fibres in general, are discussed. The use of the term "rayon" in the United States, Great Britain and other countries is reviewed. It is suggested that the term be applied only to regenerated cellulose fibres and that the name "filia" be used instead of "man-made fibres". C—1D.

Dutch Rayon Staple Spinning Mill. ("De bouw van de rayon vezelgarenproefspinnererij der A.K.U. in de Kleefse Waard te Arnhem.") D. Masselink. *Enka en Breda Rayon Revue*, 1950, **4**, 26-32. Following an earlier article,[1] an illustrated description is given of the construction of the Enka rayon-staple spinning mill at Arnhem. ([1]See *J. Textile Institute*, 1950, **41**, A246.) C—1D.

Nelson Continuous Rayon Spinning Machine. Dobson & Barlow Ltd. *Textile Manufacturer*, 1950, **76**, 195. The Nelson continuous rayon spinning machine performs all the operations of coagulation, washing, drying and spinning, in one sequence. Particular reference is made to the ebonite and metal roller along which the thread runs during processing. C—1D.

Unbleached Sulphite Pulps: Solubility in Hot Alkali. Olof Samuelson, Ingvar Berson and S. O. Regestad. *Svensk Kem. Tid.*, 1949, **61**, 234-241 (through *Chem. Abstr.*, 1950, **44**, 2234[a]). An investigation has been made of the effect on the solubility in hot alkali of unbleached sulphite pulps of varying the ratio of liquor to wood, the composition of the cooking liquor (calcium oxide and sulphur dioxide), and the temperature schedule. In each cooking series several pulps of different viscosities were produced. In general there was a definite relationship between the carbonyl content of the pulp (measured as solubility in hot alkali) and the viscosity. At constant lignin content, the yield of pulp increased with increasing CaO content. An increased SO_2 content shortened the cooking time but, when compared at constant pulp viscosity, both the yield and the lignin content of the pulp were lowered. Within the range of cooking conditions studied, high solubility of the unbleached sulphite pulp in hot alkali seemed inevitable when cooking to normal rayon pulp viscosities. C—1D.

Viscose: Filtering Properties; Effect of Wetting Agents. Olof Samuelson. *Svensk Kem. Tid.*, 1949, **61**, 227-234 (through *Chem. Abstr.*, 1950, **44**, 2235[a]). The effect of wetting agents on the filtering properties of viscose has been investigated. Curves showing the clogging constant (K_w) as a function of the carbon disulphide concentration are given for two sulphite pulps, one low and the other high in resin. The latter requires much less CS_2 for a given reduction in K_w than the former. If highly sulphonated castor oil is added, the two curves practically coincide. The turbidity of viscose decreases with decreasing resin content. A wetting agent not completely soluble in viscose, although improving filterability, also increases turbidity. A wetting agent added to the steeping liquor reduces clogging in case of pulps with low resin content but no effect is observed for pulps of high resin content. If it is added at the beginning of shredding or aging, an improvement in filterability is obtained. No effect is produced if addition is made at the beginning of solution. The addition of a wetting agent favours emulsion xanthation, but has no effect on mercerisation. C—1D.

Viscose Rayon: Continuous Spinning. E. Willmann Hansen. *Tids. Textiltek.*, 1949, **7**, 193-199 (through *Chem. Abstr.*, 1950, **44**, 2248[e]). Better quality of the yarn and a 10 per cent. lower production cost are pointed out as advantages of the use of continuous "Nelson" and "compound helical reel" spinning methods over the intermittent processes. The apparatuses are described in detail. C—1D.

Viscose Yarn: Production from Tow. ("Viscose Tow to Yarn Process Used by Longleaf Mills.") A. R. Davis. *Rayon and Synthetic Textiles*, 1950, **31**, No. 4, 51-53. Brief information is given on the production of yarn from viscose tow of 4400 total denier, 1·5 denier per filament. The drafting system of the

spinning frame is described. New types of fabrics which can be made with this yarn are indicated and mention is made of an American mill employing the system. Features of this "direct spun yarn" include uniformity, high strength and relatively high shrinkage in dyeing and finishing. C—**1D.**

Casein Fibres: Stabilisation by Desamination. R. F. Peterson and R. L. McDowell. *Textile Research J.*, 1950, **20**, 95-99. Studies on desamination of casein fibres at various steps in the spinning process are reported and experimental data are given. The desamination of casein fibres increases their resistance to dye baths. Desaminated fibres are strengthened by treatment with acid-formaldehyde solutions followed by baking at 110° C. Dye uptake of both acidic and basic dyes is reduced by the combined treatment. C—**1D.**

PATENTS

Glass Fibre Continuous Production and Sliver or Lap Forming Apparatus. Joseph Verreet. B.P.628,145 of 23/1/1947: 23/8/1949 (Conv. 30/1/1946). The claims are for a method and apparatus for the continuous production of a sliver or fleece of fibres of glass (or other thermoplastic material) in which the hot filaments are attenuated on a drawing drum and removed by a tangential knife edge before they have completed one turn round the drum. The wind produced by the rotation of the drum is so guided in stream-line flow by channels that the fibres do not intermingle and, in one form of the apparatus, are formed into a sliver. C.

Polyvinyl Chloride Coated Nylon Thread: Production. S. p. A. Lavorazione Materie Plastiche. B.P.628,466 of 2/5/1946: 30/8/1949 (Conv. 25/2/1943). The claim is for a composite thread having a core of cold-drawn nylon and a sheath of polyvinyl chloride ("Vipla") to protect it from moisture and abrasion. The sheath is applied by means of an extrusion press. C.

Cellulose Esters: Manufacture. Société Rhodiaceta. B.P.628,844 of 3/2/1947: 6/9/1949 (Conv. 8/2/1946). Cellulose is esterified in a medium in which the ester dissolves and the solution is removed (filter or centrifuge) from time to time, allowed to "ripen" and precipitated with water. C.

Apparatus for Continuous After-treatment of Loose Fibre without Access of Air. Algemeene Kunstzijde Unie N.V. B.P.629,100 of 17/12/1946: 12/9/1949 (Conv. 27/3/1946). The invention relates to apparatus for the continuous treatment of loose fibre with sprays of reagents that are sensitive to oxygen (*e.g.* hydrosulphite for bleaching casein fibre) or which disengage gases or vapours that must not be allowed to enter the atmosphere (*e.g.* hydrogen sulphide in the processing of viscose staple fibre). The conveyor consists of two series of bars forming a grid, each series oscillating with respect to the other. It dips through a V-shaped liquid seal at the entrance to and exit from the exhaust chamber in which the chemical sprays are located. The seals are filled with appropriate liquids; thus, for viscose, the entrance seal may contain a concentrated solution of sodium sulphate and the exit seal a dilute salt and acid solution. C.

2—CONVERSION OF FIBRES INTO FINISHED YARNS

(A)—PREPARATORY PROCESSES

Columbus Manufacturing Co.'s Blowroom: Re-organisation. ("New Openers and Pickers Make Evener, Cleaner Laps.") P. M. Thomas. *Textile World*, 1950, **100**, No. 3, 112-113. A brief illustrated description is given of the layout of new opening and scutching machinery in an American mill. C—**2A.**

Long Staple Rayon Waste: Carding. S. A. G. Caldwell. *Textile World*, 1950, **100**, No. 3, 108, 236, 238, 240, 242. The opening, cleaning and carding of long-staple waste rayon is discussed. A garnett machine or breaker card provides sufficient preparation and a standard flax-tow finisher card is used for the processing. Card settings are indicated. C—**2A.**

Wool/Staple Rayon Mixture: Processing on the Cotton System. ("Les mélanges intimes laine et fibre de rayonne en filature de coton.") J. Deschacht. *Rayonne*, 1948, **4**, No. 12, 85-91. The processing of wool/rayon fibre mixtures on the cotton system is considered under the following headings: (i) Use of very-short wools; and (ii) Use of combed and cut wool. C—**2A.**

Nylon Staple: Processing. E. I. du Pont de Nemours, Nylon Division. *Textile World*, 1950, **100**, No. 4, 137, 220, 222. Forty-four hints are given on the processing of nylon staple fibre on cotton and worsted machinery. C—**2A.**

Worsted High-draft Systems: Theory. ("Theory of High Drafting.") Margaret Hannah. *J. Textile Institute*, 1950, **41**, T57-T123. A general mathematical theory of the roller drafting process for textile fibres is derived with special reference to worsted spinning, and is applied to three types of process, conventional, Casablancas, and Ambler Super-draft. The forces acting are analysed after making various simplifying assumptions, and it is shown that a criterion for satisfactory drafting may be based on certain limiting values of these forces. Conclusions thus drawn are compared with practical drawing and spinning data and are found to be consistent. It is shown that the conventional process is able only to produce low drafts, the Casablancas system higher ones and the Ambler Super-draft can perform much higher drafts. Optimum conditions and settings are worked out for the Ambler process and agree closely with the results of spinning experiments. C—**2A.**

Fly Frame Planetary Gears: Mechanics. ("Das Planetengetriebe der Spindelbänke.") Lothar Rehm. *Textilberichte*, 1949, **30**, 332-337. The equation of motion of planetary gears is derived analytically, and these gears are shown to fall into two main groups. The usual formula representing gear functions is not exact because, considered from an analytical point of view, it covers hypothetical gears. A different form of the equations of motion is therefore proposed and the state of motion of planetary gears is represented diagrammatically. Finally, the results obtained are applied to seven actual gears which are illustrated. C—**2A.**

Woollen Carding. ("Platt Semi-Continental Cards Pay Handsome Dividends.") *Platt's Bulletin*, Vol. 7, No. 2, 38-39. It is contended that the dirtiest blends can be processed on Platt semi-continental carding sets, and that up to 75 per cent. increase in production over other types of sets on the same blends and counts can be obtained. Increases of from 50 per cent. to 100 per cent. in running time between fettling are possible. The increase in cylinder speed of this carding set results in better opening of the material, and there is no tendency towards an increase in fibre breakage. Some suitable speeds for different blends are given. W—**2A.**

Carding Machines: Elimination of Exposed Drives. ("Exposed Drives Eliminated on Redesigned Woolen Card.") G. Josephy's Erben. *Text. Industries*, 1950, **114**, No. 4, 253. Power is transmitted to the card by means of a long drive shaft and gear trains mounted on the side of the card, and speed changes can be made by simply changing gears. Engaging and disengaging the various elements is accomplished by means of adjustable couplings, and other features include a pressure screw for preventing breakage of bearings and gears when foreign matter enters the machine, couplings in the longitudinal shaft for detaching the first feed, metallic breast, and other devices, improved adjustability of rub aprons, uniform traverse of thread guides, *etc.* W—**2A.**

Wool Shipped after Scouring: A Test of the Combing Performance. R. V. Peryman, T. F. Landreth and P. R. McMahon. *New Zealand J. of Science and Technology*, 1948, **30**, No. 3, 170-177. This processing trial was designed to test the contention of some English top makers that colonial wools, when scoured before shipment, are unsuitable for combing because baling and transport result in entanglement and felting of the wool and so cause an unsatisfactory tear in combing. Three-quarters of a lot of 3,224 lb. greasy weight of sorted 58s warp quantity wool was scoured and divided into three parts. One part was baled, double-dumped and shipped the return journey from New Zealand to England, one part was baled, double-dumped and held at the mill, and the third part was loosely packed and held at the mill. The unscoured quarter was baled, double-dumped and shipped the double journey along with the double-dumped scoured wool and finally scoured on its return. Thus there were four lots for the subsequent combing test. Each lot was processed into tops by identical procedures, except that the double-dumped scoured wool was given an extra passage through the willey. Measurements were made on each lot of tear ratio, fibre length of top and card sliver and the nep count of the card sliver. Neither these measurements nor the observed performance from carding to combing revealed any difference of industrial importance between the lots of wool treated in the four different ways prior to processing. W—**2A.**

(B)—SPINNING AND DOUBLING

Spinning Frame: Doffing; Effect of Set-up Time on Unit Costs. A. D. Alter. *NACA Bull. (New York)*, 1949, **31**. Sect. 1, 463-468 (through *Management Abstr.*, 1950, **3**, 108). An analysis has been made of the effect on cost of production of changes in the number of machine loaders, doffing of spinning frames being used as an example. Frames in the author's firm are arranged in groups of ten. He shows that when two machines need service simultaneously two doffers working as a team produce more than if each doffs one machine. The reason for this is that the machines being serviced in sequence will need attention in sequence instead of simultaneously at the next cycle, and each servicing will take half the time. The next problem is to find the number of doffers to give the minimum amount of doffer's idle time and machine waiting time. To eliminate idle time of men and machines the doffing time should be one-ninth of the running time when there are ten machines. However, an increase in the number of doffers beyond this figure may lower unit costs by reducing the doffing time, despite the fact that there will be some doffer's idle time. A study should be made in each case, and where such a study has a bearing on unit costs involving fixed and variable charges it should come within the scope of the cost department. C—**2B**.

Centrifugal Pot Spinning Frame. E. H. Helliwell. *Textile World*, 1950, **100**, No. 4, 124-125, 218. A pot-spinning system for spinning and twisting a variety of textile fibres is briefly described. Large packages are produced (by centrifugal action), *e.g.* a 4½ lb. package of nylon, and higher spindle speeds are attainable than with ring spinning. C—**2B**.

Cotton Speed Frame Cushioned Gears. Silentbloc Ltd. *Textile Manufacturer*, 1950, **76**, 164. "Cushioned" gears have been developed in which the ring of teeth is separated from the hub by a rubber element. These gears have been tested on high-draft speed frames and a very noticeable decrease in noise is reported. The construction of the gears is shown. C—**2B**.

Cotton Spinning Calculation Graphs. ("Spinning Calculations Simplified.") *Platt's Bull.*, 1949, **6**, 261-266. In part 11 of this series calculation graphs are given for the tin roller speed required for a given spindle speed, the turns per inch inserted in yarns for various counts and twist multipliers, and for the calculated productions of ring frames and doublers in hanks per spindle per hour and in pounds per spindle per hour. (For part 10, see *J. Textile Institute*, 1950, **41**, A112.) C—**2B**.

Fine Yarns: Ring Spinning. ("Über Sonderformen des Drehzahlregelbetriebes beim Ringspinnen feinerer Garne.") F. Oertel. *Textilberichte*, 1949, **30**, 325-331. A series of spinning tests has been carried out on fine yarns at high spindle speeds and on bobbins of small diameter with a high lift, and the proper regulation of the number of turns required to compensate the yarn tension under these special conditions, which is to some extent opposite to that required under normal spinning conditions, is explained in detail with reference to the effect of the anti-ballooning separator on the spinning and regulating process. The mechanics of the regulation of yarn tension are briefly reviewed and methods of regulation corresponding to these conditions are developed in a general way and explained on the basis of experimental results. Finally, conclusions are drawn from these facts for the practical evaluation of comparative tests with and without regulation of the speed of revolution with a view to increasing production and reducing yarn breaks. C—**2B**.

Silk Throwing Machinery: Developments. E. D. Boult. *J. Textile Institute*, 1950, **41**, P79-87. An account is given of developments in various types of throwing machinery including machines for winding, doubling, spinning or uptwisting, reeling, sizing, cone winding, and pirn winding. The main progress achieved is the production of bigger and better packages at greater speeds and efficiencies. Potential improvements are indicated and a discussion of the paper is reported. C—**2B**.

Textile Mills Maintenance Programme. ("Systematic Checking Assures Uniform Processing.") Richard Crossley. *Textile World*, 1950, **100**, No. 4, 139, 230, 232, 234. It is recommended that for efficient production every textile mill should have a maintenance programme. As illustration, the checking of carding and spinning machinery by one American textile firm is briefly described. C—**2B**.

Spinning: McGlynn Hays Worsted Spinning Machines. McGlynn Hays Industries Inc. *Canadian Text. J.*, 1950, **67**, No. 9, 55-58. Describes the new McGlynn Hays ring spinning frame which incorporates a number of features: (1) High draft, (2) large size package, (3) constant balloon length by the raising and lowering of the drafting field, (4) constant spinning tension by varying the spinning speed. It is claimed that the count range covered is single 10s to single 90s. W—**2B**.

Worsted Yarn Manufacture. *Wool Record*, 1950, **77**, 1443, 1445, 1447, 1523, 1525, 1603, 1605. A review of the factors influencing quality production in spinning includes faults found in the flyer, cap and ring system; factors affecting the production of level yarns; causes of slack twists and non-uniform twists (*e.g.* machine vibration or a damaged spinning bobbin, allowing waste laps to remain in the main delivery roller, incorrect spindle speeds, *etc.*), and mistakes made by operatives (*e.g.* tying incorrect knots, "sticking" bobbins, faulty tying of ends, *etc.*). Some suggestions for raising quality standards are made. W—**2B**.

Traveller Speeds: Effects on Yarn Quality Production. *Wool Record*, 1950, **77**, 1449, 1451. A review of traveller speeds with particular reference to optimum speeds, self-lubricating rings, *etc.* W—**2B**.

PATENTS

Ring Frame Doffing Arrangement. F. W. A. Scriven. B.P.628,418 of 5/6/1946: 29/8/1949. The claim is for a ring spinning or twisting frame having three rows of spindles, the first being the ordinary rotary spinning spindles, the second consisting of short non-rotary spindles that serve as pegs on which full bobbins are placed when doffed, and the third holding empty bobbins. Spring-operated grippers with arcuate jaws are mounted on a carrying bar and can be racked forward by turning a set of hand wheels so that they grip the bobbins as required, the legs of the grippers being actuated by toggle lever mechanism. The procedure by which full bobbins are doffed and replaced by empty ones is described in the text of the specification. C

Travelling Fibre Lap Metal Detector. British Celanese Ltd. B.P.628,620 of 8/1/1947: 1/9/1949 (Conv. 11/1/1946). Apparatus for detecting metallic bodies in a fibrous lap on a conveyor belt comprises two flat coils one parallel to and adjacent the belt (*e.g.* underneath it) and the other perpendicular to and surrounding the belt so that the axes of the coils intersect in the neighbourhood of the belt. The horizontal coil is connected to an amplifier and the vertical one to a high-frequency oscillator. The presence of metal in the lap causes distortion of the field of the vertical coil and excites the horizontal coil, whereupon a signal is operated through the amplifier. C

Automatic Doffing Apparatus for Ring Frames. British Cotton Industry Research Association, James Gregory, G. A. R. Foster and Harold Catling. B.P. 628,672 of 19/7/1947: 2/9/1949 (Addition to B.P.597,887). The invention relates to an improved method for effecting the rotation of the cam shaft of the automatic doffer through a single turn. It comprises resilient means for positively and continuously urging the clutch into the engaged position, means for withdrawing the clutch at the completion of each single rotation, and means for disengaging the de-clutching means to permit the next cycle of rotation. (See *J. Textile Institute*, 1948, **39**, A473.) C

Carding Engine Licker-in Guard. Greenhalgh & Shaw Ltd., B. B. Dutton and Jack Leigh. B.P.629,065 of 27/10/1947: 9/9/1949. The claim is for a guard that obstructs access to the licker-in while this is rotating but can be moved to an open position in which it then prevents rotation of the licker-in. It includes a plate mounted for oscillation on a horizontal spindle that is carried by the side frames of the card. C

Cotton Combing Machine Safety Devices. Robert Fairclough, Norman Miller, W. M. Balshaw and F. W. Thomas. B.P.629,431 and 629,432 of 3/9/1947: 20/9/1949. (1) Safety means for preventing the raising of a top comb of a machine of the Heilman or Nasmith type while running and for preventing the machine from being started while a top comb is raised, comprises an oscillatable horizontal rod carried in bearings above the arms that carry the top combs and hanging rods that engage the comb arms while the machine is in motion. The horizontal rod also carries at the driving end of the machine a lever system combined with a plate or arm which is blocked by a projection on the starting

rod of the machine so that the horizontal rod cannot be rotated so as to set the comb arms free. Conversely, when the machine is stopped and the horizontal rod is turned the plate or arm blocks the starting rod. (2) A guard for the comb cylinder and detaching rollers comprises a channel-shaped bar secured to the frame above the comb teeth and carrying a series of U-shaped wire members that project over the detaching rollers and are set so close together as to obstruct access of the operative's fingers to the front roller. C.

Wool: Removal of Foreign Matter. ("Removing Foreign Matter from Textile Fibres.") E. Hurst. B.P.634,388 of 22/3/1950. Wool slivers are passed through successive pairs of drawing rollers to align the fibres and adhering foreign matter, *e.g.* vegetable particles. The web is then passed through successive pairs of toothed rollers, with or without further drafting, to break the foreign matter into short lengths and to split it longitudinally. The foreign matter is released from the fibres by vibrating and/or other means. The fibres remain uninjured. W.

3—CONVERSION OF YARNS INTO FABRICS

(A)—Preparatory Processes

Direct-spun and Re-wound Weft: Comparison of Quality and Costs. A. Ormerod. *Textile Weekly*, 1950, **45**, 988-1008, 1074-1090. The author presents a detailed, systematic study of the respective merits of direct spinning of the weft package for automatic looms and of the more prevalent system in Lancashire whereby yarn is re-wound for the purpose. His study is based partly on direct comparisons of the two systems within one organisation. The mass of data is presented under the following headings, with tables and graphs: (I) Introduction and statement of the problem. (II) Production and costs of direct-spun ring yarn; Table I, Assignment of frames to doffing team for minimum total cost, on 4s to 24s weft; Fig. 1, Plots of the ratio of machine running time to attention time against the ratio of machine loading rate per unit to direct labour rate per operator; Table II, Distribution of labour and depreciation costs; Fig. 2, Plots of count against machine efficiencies and machine interference per cent to give minimum costs of labour + depreciation; Fig. 3, Distribution of direct labour and depreciation costs for various counts spun direct into 8-in. Northrop pirns on 1¼-in. weft rings with the doffing teams deployed to give minium total cost. (III) Production and costs of rewound weft; Table III, Factors affecting pirning spindle productivity; Table IV, Summarised results of optimum spindle allocation; Tables V and VI, Comparison of re-winding costs and OHP for automatic and non-automatic pirn winders re-winding from cones and a non-automatic winder re-winding from cops; Fig. 4, Plots of cost per spindle against minimum complement of automatic spindles for comparable processing costs with non-automatic spindles. (IV) Comparison of production and cost of direct-spun and re-wound weft; Table VII, Reduction in battery filling costs due to re-winding; Table VIII, Comparison of costs of direct spinning and re-winding when preparing a weft package for the automatic loom; Table IX, Effect of package size on production and costs (under the wage calculation system of the Cotton Manufacturing Commission, "CMC"). (V) Consideration of quality; Table X, Resistance to air flow of direct-spun and re-wound weft. Appendix A is a table of piece rates for pirning various yarns on Leesona Type 90 machines, and Appendix B shows assignments of battery fillers for direct-spun and re-wound weft on 8-in. Northrop pirns. The author's general conclusions are as follows (i) The direct-spun weft package is more economical and satisfactory for the automatic loom than the re-wound package, especially at the finer counts. The cost curves converge at lower counts but the direct-spun package is still economical at counts as low as 5. (ii) Where the CMC system of wage calculation is in use the cost of re-winding can generally be recouped, especially on coarse counts, unless direct spinning into large packages is possible. Where the Uniform List of wage calculation is in use re-winding is frequently uneconomical and the ordinary 4-loom system of weaving will be cheaper. (iii) Where re-winding is justified, automatic pirn winding from cones is cheaper than non-automatic winding from cones or ring tubes, up to counts 32s to 36s. With finer yarns non-automatic winding becomes economical. It makes little difference to the cost whether the feeder package is a cone or a ring tube. (iv) Each automatic pirning machine has an economic range of utilisation which is mainly

determined by prime cost and spindle productivity per unit of work. (v) Rewinding has not such a beneficial influence on the weaving quality of weft as is often claimed. Sometimes the knot is a greater nuisance than the weak place it replaces. Whether or not pirning is desirable for improving cloth quality will depend on individual circumstances, such as the acceptance standards. A discussion of the subject is reported. C—**3A.**

"Rawson" Pirn Winder. J. Rawson & Sons Ltd. *Textile Weekly*, 1950, **45**, 954-956. An illustrated account is given of a new pirn winding unit in which the single spindle is driven by a fractional h.p. motor without gears and doffing is by hand. The units are usually assembled in groups of five and speeds can be varied individually, by steps of 500 r.p.m., from 3,000 to 6,000. The traversing mechanism is hydraulic and self-adjusting. Adjustments for pirn length and diameter are very simple and change from S- to Z-twist is done by plugging in to a different socket. C—**3A.**

Warping Machine for Tricot and Raschel Warps. Ohio Knitting Co. *Textile World*, 1950, **100**, No. 3, 141-142. A brief illustrated description is given of a warping machine for Kidde Knitter and Raschel machines. Short sections or full length warps can be produced. Sectional warps can be produced without rebeaming. A waxing attachment is fitted to the machine. C—**3A.**

Artificial Fibre Yarns: Winding. ("Quality winding techniques for synthetic yarns.") K. H. Inderfurth. *Rayon and Synthetic Textiles*, 1950, **31**, No. 3, 72-74; No. 4, 65-67. Winding techniques for artificial fibre yarns are discussed. Figures are given for the maximum winding tension and the density of the wound package as well as details on winding nylon yarns and 5-denier monofilament yarn, on the weights of nylon packages and on knots. Tension devices are discussed and reference is made to the "magnetension" system. Other topics dealt with are winding artificial weft yarns, tensions used in quilling, quilling of raw nylon yarns, winding spun rayon yarns, speed of winding and taper used, taper of cones in winding, and headless package uptwisting. C—**3A.**

Continuous Filament Yarns: Preparation for Weaving. T. H. W. Hulme. *J. Textile Institute*, 1950, **41**, P105-114. The processes used in the preparation of continuous filament silk, rayon and nylon yarns for weaving are discussed with particular reference to possible improvements under the headings: Supply packages; Winding; Warping; Sizing; Entering; Transport; Tying and entering; and Miscellaneous yarn faults. A discussion of the paper is reported. C—**3A.**

Skeins: Reeling; Efficient Working. R. W. Harbeck. *Textile World*, 1950, **100**, No. 4, 130-131, 216, 218. Basic equations are given for the calculation of production, winding time and yarn count for reeling operations. Charts are available from which these and other quantities including doffing time, skein weight and reel speed, can be read off directly. Efficient winding can be obtained by employing the principle of short-reel reeling. C—**3A.**

"Surco-5" Yarn Conditioning Device for Cone Winders. Kearny Mfg. Co., Inc. *Textile World*, 1950, **100**, No. 4, 147. Brief details and an illustration are given of a yarn conditioning device that is attached to the cone winder and applies moisture to the yarn during the actual winding. The apparatus is known as the Surco-5. C—**3A.**

Yarns: Electrification. M. M. Taylor. *J. Textile Institute*, 1950, **41**, P88-93. The electrification of yarns which may occur during knitting, yarn preparation, and weaving is discussed briefly, and methods for preventing "static" are outlined. A discussion of the paper is reported. C—**3A.**

(B)—Sizing

Sizing Machines: Control. ("4 New Trends in Slasher Controls.") L. E. Cuckler. *Textile World*, 1950, **100**, No. 3, 137, 246. The following sizing controls are briefly described: (1) Automatic water-level control in size cooking; (2) Constant taping speed moisture regain control; (3) Size-viscosity measurement, recording and control; and (4) Pneumatic squeeze-roller loading. C—**3B.**

Pilot-plant Tape Frames. ("Two Ways to Test Warp Sizes.") *Textile World*, 1950, **100**, No. 3, 124-127. Brief illustrated descriptions are given of the Monsanto and of the Callaway small-scale tape frames for experimental or pilot-plant work. C—**3B.**

Continuous Filament Rayon Yarns: Sizing. S. D. Weaver. *J. Textile Institute*, 1950, **41**, P94-104. An illustrated description is given of past and present methods and machines for sizing continuous filament viscose and acetate rayon warp and weft yarns. A discussion of the paper is reported. C—**3B**.

(C)—WEAVING

Electromagnetic Dobby Loom Drive. ("Schaftmachinen mit elektromagnetischer Steuerung.") Ernst Rank. *Kunstseide u. Zellwolle*, 1949, **27**, 293-298. A detailed, illustrated description is given of the operation of electromagnetically driven dobby looms, with particular reference to the Sample Weaving Machine of the Sample Weaving Machine Co., Ltd. C—**3C**.

"Stroboloom" Instrument: Application in Studying the Loom in Action. Dawe Instruments Ltd. *Textile Weekly*, 1950, **45**, 1154. An illustrated note is given of a high-intensity stroboscope for studying the flight of a shuttle. The duration of the flash is about 50 micro-seconds and the maximum rate of flashing 220 per minute. The instrument is synchronized with the motion under observation by a contactor fitted with a remote control. C—**3C**.

"Duxbury" Warp-weighting Motion. ("Warp Control without Weights.") Duxbury Bros. (Loom Patents) Ltd. *Textile Weekly*, 1950, **45**, 1218. An illustration is given of a warp-weighting motion that can be fitted to looms for a very wide range of fabrics, from bandage cloth to heavy furnishings. Its use obviates weight lifting or the manipulation of heavy foot or hand levers. In releasing the beam for pulling-back purposes a cotter pin is placed in a slotted leaf so that the weaver can be sure of returning to the required tension. C—**3C**.

Fixed Sley Loom Rotary Beat-up Motion. ("Can the Orthodox Slay be Eliminated?") R. Williamson. *Textile Manufacturer*, 1950, **76**, 174. Following on a recent article by Hart[1] on a new principle in loom design employing a fixed sley, it is suggested that a rotary beat-up mechanism would remove some drawbacks of the original idea. This consists of a roller, situated just below the fell, having two rows of pins or blades which beat-up the weft as the roller rotates. ([1] *J. Textile Institute*, 1950, **41**, A249.) C—**3C**.

Flywheeled Loom Motors: Application. ("Flywheels on Loom Motor Permits High Speeds, Low Power Cost.") R. J. Demartini. *Textile Industries*, 1950, **114**, No. 3, 109-111. The advantages of loom motors fitted with flywheels are discussed. Factors affecting loom loads are considered and a graphical comparison of the operating characteristics of high- and low-inertia loom drives illustrates the part played by the flywheel in assisting the motor to meet instantaneous power demands of the loom. C—**3C**.

Loom Frog Lever Lifting Device. ("An Aid to the Weaver.") Woodleigh Engineering Service. *Textile Weekly*, 1950, **45**, 1286. A diagram is given of a patented safety device for operating the frog lever. The mechanism comprises a cam-action control lever mounted on a steel plate, to which is attached one end of a Bowden wire cable which is worked by a thumb lever screwed to the sley. By resting the hand on the sley and pressing the thumb lever, the weaver can operate the frog lever at will and releases the pressure on the swell. C—**3C**.

Negative Dobby Shedding Motions. ("The Keighley Dobby.") W. Middlebrook. *Textile Manufacturer*, 1950, **76**, 160-162. Continuing his article on dobby shedding motions[1] the author gives illustrated technical descriptions of the Keighley, "W.B.", "Durable", "Dreadnought" and "Climax" dobbies. ([1] *J. Textile Institute*, 1950, **41**, A289.) C—**3C**.

Rayon Looms: Rebuilding. ("Mill Solves Problem by Rebuilding Looms.") E. H. Helliwell. *Textile World*, 1950, **100**, No. 4, 122-123. A brief illustrated account is given of the system used by an American textile mill for the rebuilding of old looms. C—**3C**.

Shuttles: Construction and Care. M. M. Tiwari. *Indian Textile J.*, 1950, **60**, 416-417. The construction, oil steeping, and fitting of shuttles are discussed briefly. Specifications are given for ordering new shuttles. C—**3C**.

Lancashire Looms: Shed and Pick Settings. ("Die Fach- und Schlagstellung am englischen Webstuhl.") Peter Kober. *Textilberichte*, 1949, **30**, 392-395. An attempt is made to discuss with the aid of a timing circle the way in which

the operation of the loom depends on sley movement, shed formation and picking motion, to indicate the requirements for an optimum weaving process, and to fix the most favourable moments for each operation. C—**3C.**

Weaving Sheds: Organisation; Simple Statistical Aids. I. Laird. *Textile Manufacturer*, 1950, **76**, 175-178, 183. Continuing his articles[1] on the use of simple statistical aids in weaving sheds, the author discusses cumulative line graphs, moving annual total graphs and charts, "Z" charts, frequency distribution diagrams and charts, and reed width frequency charts. Examples of each are given. ([1]*J. Textile Institute*, 1950, **41**, A188.) C—**3C.**

Weaving Shed: Management. ("What Do We Mean by Good Weaving," 5.) —. Morland. *Silk & Rayon*, 1950, **24**, 514. In continuation of a previous discussion[1] time losses due to weft replenishment are considered and the relative merits of the automatic loom and the non-automatic using large weft packages are pointed out. Weaving times for different sizes of pirn are given for some typical filament rayon fabrics. ([1]*J. Textile Institute*, 1950, **41**, A23.) C—**3C.**

(D)—KNITTING

Knit Wear: Production in an American Mill. ("Constant Control Yields Quality Knit Wear.") E. D. White. *Textile World*, 1950, **100**, No. 3, 122-123, 230, 232, 234, 236. An illustrated description is given of the production methods employed by an American knitting mill, with emphasis on quality and efficiency. C—**3D.**

Knitted Fabrics: Style and Construction Records. ("Construction Sheets—Valuable Knitting Records.") Lawrence Levy. *Textile World*, 1950, **100**, No. 3, 118, 119. The use of construction sheets as records of knitted fabrics is explained. The data entered on the sheet enable sample fabrics to be duplicated with ease when required. Specimen sheets are shown. C—**3D.**

Knitting Machine Welt Turner: Setting. H. B. Le Feaux. *Textile World*, 1950, **100**, No. 3, 110-111, 115. Instructions are given for the checking, setting and general care of welt-turners. The article is illustrated and the action of the automatic welt-turner is explained by a series of diagrams. C—**3D.**

Komet Knitting Machine Verge Collar Tool. Ernest Bridges. *Textile Industries*, 1950, **114**, No. 3, 141. Constructional details are given for a tool for removing the verge-tube collars of Komet knitting machines. C—**3D.**

Crêpe Yarns: Preparation for Knitting. ("Problemen bij crêpe verwerking in de breierij.") M. H. van der Noordaa. *Enka en Breda Rayon Revue*, 1950, **4**, 18-25. Differences between ordinary and crêpe yarns are considered and the various steps in the preparation of rayon crêpe yarns for knitting are described and illustrated. C—**3D.**

Fine-gauge Knitting Machine Needles: Adjustment. ("Pay Attention to Needles on 400-Needle Machines.") Charles Arrowood. *Textile World*, 1950, **100**, No. 4, 113-114. Factors which influence the production of good quality knitted fabrics include good needles, cylinder and walls, auxiliary cams, pickers and droppers, nicked cams and pattern-drum cams. Practical hints are given on needle adjustment. C—**3D.**

Full-fashioned Knitting Machine: Adjustment. ("Four Motions Are the Key In Full-Fashioned Hose.") H. B. LeFeaux. *Textile World*, 1950, **100**, No. 4, 108-109. The checking of (1) needle bars, (2) sinkers and dividers, (3) knock overs, and (4) presser rollers in the production of good quality full-fashioned hosiery is briefly described. C—**3D.**

Interlock Fabrics: Production on Flat Knitting Machines. ("Interlockwarenherstellung auf Flachstrickmaschinen.") Wilhelm Busch. *Textilberichte*, 1949, **30**, 342-343. The reconstruction of an automatic flat knitting machine to adapt it for the production of interlock fabrics is described. The redesigned racking device is illustrated and point-paper diagrams are provided of interlock fabrics that have been obtained on this machine. C—**3D.**

Knitted Outerwear Machines: Maintenance. ("Cleanliness is Important in Outwear Production.") Lawrence Levy. *Textile World*, 1950, **100**, No. 4, 116-117. Factors other than those connected with machine settings which affect the quality of knitted goods, include (1) mixing of yarns, (2) wrong needles and sinkers, (3) correct length of stripe, (4) excess of oil, and (5) cleanliness of machine. C—**3D.**

Ribbed Moss Crêpe Jersey: Production. ("Ribbed moss crêpe-jersey.") J. C. Meijberg. *Enka en Breda Rayon Revue*, 1950, **4**, 9. Ribs in moss crêpe fabric are obtained by pick-and-pick weaving of one thread with S- and one thread with Z-twist. Longitudinal and cross ribs are formed alternately, giving a chequer-board effect. C—**3D.**

(G)—FABRICS

Dress Fabrics with Fancy Yarns: Design and Production. A. T. C. Robinson. *Silk & Rayon*, 1950, **24**, 95-100, 160, 165-168. The production of fancy yarns is considered in general and types and ways of using them are discussed. The preparation of bouclettes, bouclés and gimps is described and examples are illustrated. The weaving of various fancy cloths is dealt with including armured bouclette, a pin-stripe chevron bouclette and cellulose acetate and worsted bouclette, yarn-dyed bouclette check, charmeuse bouclette, armured bouclé crêpe, *etc.* The production of loop yarns is briefly described. These are used for making imitation Astrakhan and other woolly-textured coating fibres. Mohair is the ideal material for these yarns. The construction of a mossy crêpe in mossy loop yarn is described. Spots, knops and slubs, and fabrics made from them are described. These include novelty crêpes, satins, slub marocain and bouclettes with overcheck. The prevention of the fault of patterning and difficulties encountered when weaving fancy yarns are dealt with. C—**3G.**

Vinyon Yarns: Use in the Production of Pile Fabrics. ("Pile Fabrics Possible from Ordinary Looms.") Arthur Johnson. *Textile World*, 1950, **100**, No. 3, 131, 133, 242, 244, 246. The production of pile fabrics from combinations of Vinyon and wool, cotton or viscose is described in outline. After weaving (which in some cases can be carried out on single-shuttle looms) the fabrics are soaked in hot water, when the Vinyon shrinks, thus causing loops of the other yarn to rise on the cloth. C—**3G.**

Artificial Fibres: Use in the Woollen Industry. Edward Dobbins. *Rayon and Synthetic Textiles*, 1950, **31**, No. 3, 69-71; No. 4, 68-69. Advantages of using blends of wool and artificial fibres include stabilisation of prices, controlled fibre properties, the use of cheaper wools and improved resistance to abrasion and shrinkage. The suitability of the woollen system for spinning blends and the role of special finishes are briefly discussed, and the need for changes in merchandising methods is pointed out. C—**3G.**

Rayon/Staple Fibre Mixture Fabrics: Construction. ("Mischgewebe aus Zellwolle und Kunstseide, insbesondere solcher mit Titerschwankungen.") A. Zart. *Textilberichte*, 1949, **30**, 340-342. Linen-like rayon fabrics may be produced by using rayon yarn with varying count (*Titerschwankungskunstseide*), the use of which requires knowledge of its peculiarities. Particularly good results are achieved by using it in blends with staple fibre. Specimens of five such fabrics are provided with details of their construction and some experimental data on their properties. C—**3G.**

Satin-backed Crêpes: Design and Production. A. T. C. Robinson. *Silk & Rayon*, 1950, **27**, 513-514. Some examples of single and double warp constructions of satin-backed crêpe dress fabrics are described and illustrated, including crêpe phantom, satin-backed failles, and satin-backed ribs. C—**3G.**

PATENTS

Positively-driven Warp Let-off Motion. Jaime Picanol. B.P.628,252 of 29/1/1946: 25/8/1949 (Conv. 3/12/1940). The claim is for a positively driven warp let-off motion comprising a roller oscillating in rhythm with the shed and a whip roller, the tension of the warp on this roller controlling the amount of yarn paid out by the revolving warp beam. The oscillation axis of the support for the whip roller is located in such a position that the moment about the axis of the pressure of the resultant of the forces acting on the roller has for a predetermined tension in the warp a constant value that is independent of the beam diameter. The support takes the form of a lever and is balanced by a spring. Its oscillations are transmitted by a connecting rod to a bell-crank lever mounted on a fixed pivot pin and a second connecting rod, pivoted to the other end of the bell-crank lever controls an intermediate lever having an adjustable stroke and transmitting motion from the sley sword to the operating pawl of the warp beam ratchet wheel. C.

Pedal-operated Hand Loom. Intabo A.-G. B.P.628,498 of 4/3/1947: 30/8/1949 (Conv. 13/3/1946). The invention relates to a hand loom in which picking is

effected by means of a pair of pedals on the ends of a pair of two-armed levers, connected by cords to the picking sticks through a segment on a horizontal shaft. C.

Heel and Toe Sutures Knitting Device. Scott and Williams, Inc. (assignees of R. H. Lawson). B.P.628,526 and 628,590 of 17/11/1944: 31/8/1949 (Conv. 13/11/1943). (1) The invention relates to the knitting of heel and toe sutures on independent-needle machines. A number of yarns are fed separately to the needles during reciprocatory knitting so that any one yarn appears only in a recurring group of courses, and the fabric is progressively narrowed and widened by varying the needles so that in widening the group of needles added in the knitting of one or more courses divides a group of needles that were narrowed together. Details are shown in 14 sheets of machine drawings. (2) The groups of courses are knitted from yarns of contrasting colours to facilitate the subsequent engagement of the loose course loops on the points of a looping machine. C.

Straight-bar Knitting Machine Coulier Mechanism. William Cotton Ltd., J. E. Lynam and P. G. McCarthy. B.P.628,527 of 6/1/1945: 31/8/1949. In Coulier or draw mechanism for a straight-bar knitting machine of the kind having a member that moves to and fro along the needle line with a constant amplitude, a carrier that moves along the same line with a variable amplitude, and corresponding driving mechanism the driver moving to and fro with a constant amplitude, two rotary spindles are used as driving connections, and the coupling between the driver and the carrier-driving spindle is hydraulic and designed to vary the amplitude of travel of the carrier. C.

Straight-bar Knitting Machine Intarsia Fabric Mechanism. Whyte & Smith Ltd. and G. H. Woolley. B.P.628,531 and 628,591 of 1/6/1945: 31/8/1949. (1) A main object of the invention is to knit intarsia or argyll diamonds on straight-bar machines with less bulkiness than heretofore at the junctions of the diamonds. This is achieved, for example, by the use of a set of thread carrier rods and arranging that while they are at the plain side of the needles (the back) the widening carriers are shogged one needle and the narrowing carriers are shogged two needles in the other direction, or *vice versa*. (2) Cam mechanism for traversing the rods is claimed. C.

Electronic Weft Feeler System. W. W. Triggs (for Crompton & Knowles Loom Works). B.P.628,607 of 20/11/1946: 1/9/1949. An electric weft-detecting system comprises a circuit, including a gas-filled valve tube and an electromagnetic device for initiating changes in loom operation, and a control circuit having contacts that form part of the weft feeler and controlling the grid of the valve tube at such a potential that the tube does not "fire" so long as the weft supply is not exhausted. Weft failure leads to discharge of a condenser through the contacts and thereby to change in grid potential and firing of the tube. Circuit diagrams are shown. C.

Circular Knitting Machine Needle Transfer Mechanism. Hemphill Co. B.P. 628,627 of 17/1/1947: 1/9/1949 (Conv. 1/2/1946). The invention relates to means for transferring from rib to plain knitting or from one type of rib to another when knitting on machines having superposed co-axial cylinders provided with needle slots. Identical groups of sliders within the slots are each adapted to move longitudinally and to swing outwards and resilient means (springs) surrounding the cylinder are provided for maintaining the sliders within their slots regardless of their longitudinal position. C.

Loom Beat-up Mechanism. William Matterson. B.P.628,693 of 12/9/1947: 2/9/1949. The sley carrier (*i.e.* the loom batten) is associated with horizontally reciprocable slides that are directly connected, by rods or links, to cranks on the crank shaft, the slides being pivoted to members that in turn are pivoted at fixed points on the loom. C.

Lengthwise Knitted Fully Fashioned Stockings. Textil-Forschungen A.-G. B.P.628,744 of 2/7/1946: 5/9/1949 (2/7/1945). The claim is for an automatic method of knitting fully fashioned stockings in which the courses in the leg and instep extend lengthwise instead of transversely. C.

Straight-bar Knitting Machine Driving Mechanism. George Blackburn & Sons Ltd., H. W. Start and Ernest Start. B.P.628,874 of 4/9/1945: 7/9/1949. The reciprocating member of a straight-bar knitting machine is driven from the

normal draw mechanism associated with the slur-cock tie bar, thus obviating the need for special draw mechanism for the purpose. C.

Circular Knitting Machine Yarn Furnishing Device. Bentley Engineering Co. Ltd. and A. W. Kent. B.P.628,877 of 20/6/1946: 7/9/1949. The claims are for yarn furnishing devices for a wide circular knitting machine, comprising two tapered, toothed members that mesh together and on rotation feed the yarn between them, means for shifting the point at which the yarn passes, and therefore adjusting the rate of delivery, and, for each device, toothed change-speed gearing affording a choice of gear ratios for driving the furnishing members from a gear common to all of them. C.

Synthetic Resin Sizes: Application. Monsanto Chemical Co. B.P.628,881 of 7/11/1946: 7/9/1949 (Conv. 1/12/1945). Fibres, yarns or fabrics are given a permanent finish by treatment with a solution of (A) an ammonium or amine salt of a styrene/maleic copolymer and (B) a monomeric condensation product of an aldehyde and urea, thiourea, melamine, dicyandiamide or phenol (*e.g.* tetramethylolmelamine or its butyl ether), followed by drying and heating at 200-300° F. The quantity of (A) added is 2-15 per cent. (particularly 4-7 per cent.) by weight and the amount of (B) is 2-20 per cent. of the weight of (A). C.

Styrene/Maleic Co-polymer and Polyamine Dispersion: Application in Sizing. Monsanto Chemical Co. B.P.629,097 of 7/11/1946: 12/9/1949 (Conv. 1/12/1945). A dispersion for sizing loose fibre, warps or fabrics comprises an aliphatic polyamine (ethylene diamine, diethylene triamine or tetraethylene pentamine) and an ammonium or amine salt of a co-polymer of styrene or substituted styrene with maleic anhydride or a partial ester of maleic acid. The dispersion is dried into the textile material at 200-300° F. to form an insoluble resin. C.

Straight-bar Knitting Machine Jack-stop Mechanism. Mellor Bromley & Co. Ltd. and Arthur Shortland. B.P.629,190 of 2/5/1947: 14/9/1949. To minimise the possibility of jack sinker butts being broken in use, stops are fitted for engagement by part of each jack to limit its advancing movement at the time its sinker strikes the falling bar. A limit stop is also fitted to travel with the slur-cock. C.

Automatic Pirn Winding Machine Thread Clamping Device. Maschinenfabrik Schweiter A.G. B.P.629,194 of 17/6/1974: 14/9/1949 (Conv. 1/7/1946). The invention relates to means for clamping the thread at the commencement of the winding operation on automatic pirn winders. A bar with cross bar (L or T shaped) serving as thread holder is mounted in the spindle with the cross bar engaging in a groove in the end face of the spindle and projecting beyond it, and the spindle has a spring-pressed ejector that strikes against a lug on the thread holder and presses the cross bar into the groove in the spindle when the bobbin has been chucked or inserted. Correspondingly, the rear end of the bar strikes against the front of the spindle bearing as soon as the spindle, when drawn back, releases the bobbin, whereby the cross bar is lifted out of the groove and the thread of the ejected pirn is released. After each change of bobbins, therefore, the thread that tails over the edge of the spindle, and runs from the ejected pirn to the thread guide, is caught up, on the rotation of the spindle, by the projecting thread holder and clamped in the groove in the spindle. C.

Circular Knit Stocking Heel: Construction. Scott & Williams Incorporated (assignees of H. N. Sheppard). B.P.629,236 of 9/10/1945: 15/9/1949 (Conv. 10/10/1944 and 31/5/1945). The invention relates to the construction of a stocking heel that occupies a large segment of a circle between the ankle and the instep. It comprises a number of tapered gussets, one below the other, every course containing less than half the wales of the leg of the stocking. An upper gusset and its lower neighbour are both narrowed ones and the lower one contains more wales and courses than the upper one. C.

Circular Knitting Machine Ribbing Mechanism. Fidelity Machine Co. B.P. 629,249 of 4/3/1946: 15/9/1949 (Conv. 23/9/1943). The principal object of the invention is the knitting of true rib fabric on a cylinder and dial knitting machine without the use of take-up weights to tension the web and hold it on the dial needles. Presser members are fitted in the slots for the latch needles and are provided with fingers at their outer ends for holding down the loops of yarn. C.

Lug-strap Actuated Picker Stick. C. G. Hunt. B.P.629,316 of 10/3/1947: 16/9/1949 (Conv. 9/3/1946). The claim is for a picker stick of the lug-strap actuated vertical type which is characterised by being narrowed to 60-75 per cent. of its diameter over a length beginning at not more than 60 per cent. of the stick length from the striking end and ending at a point not less than 20 per cent. from the upper end, that is between a check or bumper and the lug strap. C.

Winding Machine Disc Tensioning Device. Universal Winding Co. B.P. 629,319 of 12/3/1947: 16/9/1949 (Conv. 13/3/1946). A tensioning device of the spring-pressed disc type is formed of a large and a small disc mounted to rotate eccentrically, *e.g.* so that the small disc is wholly to one side of the centre of the large disc. C.

Circular Knitting Machine Automatic Lubricating Mechanism. G. Stibbe & Co. Ltd., E. V. Stibbe and Bert Smith. B.P.629,379 of 5/7/1947: 19/9/1949. The invention relates to automatic means for supplying liquid lubricant to working points of a machine and particularly for the faces of the cams, the butt tracks, the needle beds and the tricks or grooves of a circular knitting machine. After serving one receiver the oiling member automatically dips into the oil container before moving on to the next receiver. There are 18 claims and the mechanism is described with the help of four sheets of machine drawings. C.

Loom Shedding Motion. Sulzer Frères Soc. anon. B.P.629,411 of 10/12/1946: 20/9/1949 (Conv. 12/12/1945). The claim is for a loom that has a lever for positively driving the heald shafts. During weaving, this lever is rocked about a stationary pivot but interrupting mechanism is provided to shift the pivot and bring the shafts into a desired rest position on stopping the loom. C.

Bobbin Winding Machine Traversing Device. Etablissements Poron B.P. 629,475 of 9/1/1947: 21/9/1949 (Conv. 26/7/1939). A winding machine is fitted with at least two reciprocating guides whose motions have the same frequency but are phase-displaced so that they operate in succession. Reversal of motion occurs during suspension of the guiding function. C.

4—CHEMICAL AND FINISHING PROCESSES

(A)—Preparatory Processes

Enzyme Desizing Agents: Properties; Practical Importance. ("Die praktische Bedeutung der enzymchemischen Eigenschaften von enzymatischen Entschlichtungsmitteln.") E. Schubert. *Textil-Rundschau*, 1950, **5**, 1-14. The characteristics of enzyme reactions are described and four groups of amylases (pancreatic, malt, bacterial, and fungal) are distinguished. Temperature activation and heat inactivation of enzymatic products are discussed and experimental results are reported which indicate that pancreatic amylase shows the highest and bacterial amylase the lowest temperature activation, yet the pancreatic amylases are much less heat-resistant than the bacterial amylases. Heat resistance may be improved by the addition of stabilisers. Stability and activity curves as a function of *pH* are presented and optimum *pH* ranges are given. The activating effects of salts, particularly chlorides and bromides, and the inhibiting effects of heavy metal salts and wetting agents are considered. A practical desizing test is described and typical results obtained with that test are illustrated by colour photographs (iodine reactions), showing the influence of (i) duration of desizing, (ii) liquor ratio, (iii) temperature, (iv) type of amylase, (v) heat stability, and (vi) *pH*. C—**4A.**

(B)—Boiling, Scouring, Degumming and Washing

Rayon Fabrics: Risk of Damage in Finishing. *Silk & Rayon*, 1949, **23**, 272, 274, 276; 812, 814, 819-820. The risks of damage to rayon fabrics in processing and the necessary control are discussed from a practical point of view under the following main headings: (i) Control of the early scouring and bleaching processes; and (ii) Bleaching processes that use active chlorine. C—**4B.**

Wool Washing: Old and New Methods. R. Gutensohn. *Text.-Praxis*, 1949, **4**, 513-516, 562-565, 617-621. The development of processes for washing wool is described, including alkaline washing, washing at, or in the region of the isoelectric point, neutral washing, the Duhamel process and weak alkaline processes. The chemical nature of the wool fibre is discussed, and the influence in washing

of the mechanical equipment used, of temperature, *pH* and of various washing agents, including modern non-ionic products. Recipes are given for typical baths for the various methods of washing. W—**4B.**

(D)—MILLING

Milling Fabrics Consisting of Wool and Artificial Fibres: Practical Advice. ("Conseils pratiques pour le foulage des tissus mixtes laine-fibres artificielles.") L. Rinoldi. *Rayonne*, 1950, **6**. No. 4, 72-73 (translation of article in *Raion*, Nov.-Dec., 1948). Up to 50/60 per cent. of viscose rayon can be mixed with wool of any quality; the warp and weft should preferably contain the two fibres in the same proportion. If the fabric contains more than 20 per cent. of artificial fibre, the milling method must be altered, and the necessary modifications are briefly suggested. The possibilities are also discussed of acid, alkaline and neutral milling. W—**4D.**

(E)—DRYING AND CONDITIONING

Steam Heated Driers. Leo Walter. *Practical Engng.*, 1950, **21**, 146-147; 180-182; 264-266; 292-293. An illustrated survey is made of steam heated driers, their construction and use. Subjects dealt with include brief theory of drying, hot air drying, adjustment of air dampers, spacing of goods, drying by contact heat, drying installations, grain and multi-conveyor driers, textile drier with heating stacks, and dehumidification units. C—**4E.**

Infra-red Drying Equipment: Application. ("Die Infrarottrocknung in der Textilveredlungsindustrie.") Hermann Haas. *Textilberichte*, 1949, **30**. 369-372. The differences between drying by the infra-red method and conventional methods are considered and the advantages of the former method are described. C—**4E.**

(G)—BLEACHING

Sodium Chlorite: Textile Applications. ("Les applications du Chlorite à l'Industrie Textile.") Jean Meybeck. *Teintex*, 1949, **14**. 505-519. A review is presented of (*a*) the chemistry of sodium chlorite, (*b*) its action on metals, alloys, and plastics, and (*c*) its bleaching effect on cotton, viscose rayon, linen, wool, silk, and polyamides. There are 46 references, mainly to French patents. C—**4G.**

Textile Fabrics: Bleaching without Boiling. Ralea Radu and Lazăr Mayer. *Rev. Teh. AGIR, Textile*, 1949, **3**. 62-64 (through *Chem. Abstr.*, 1950, **44**, 1713[a]). Recent research indicates that boiling for fabric bleaching diminishes the quality of the fibre. A method is described for fabric bleaching without boiling. The steps are (1) an acid steep, (2) washing with warm water, (3) bleaching with alkaline sodium hypochlorite, (4) bleaching with acidic hypochlorite, (5) anti-chlorine with bisulphite, (6) acid rinse, and (7) final wash. The advantages of the procedure are: smaller loss in strength and weight of the fabric; gain in time, materials, and steam; reduction to half of the usual amount of sulphuric acid required; easier coloration of the fabric; and improvement in the working conditions since no chlorine is evolved. C—**4G.**

Wool: Bleaching. ("Whiter Wool.") R. W. Moncrieff. *Text. Manufacturer*, 1950, **76**, 184-186. Optical bleaching is discussed and the theory underlying the behaviour of optical bleaches, the two main classes (uranyl compounds or platinocyanides, and organic compounds possessing a system of conjugated double bonds), and methods of application to wool are given. Stoving and peroxide bleaching are mentioned. W—**4G.**

(I)—DYEING

Metallised Dyes: Properties and Application. ("Merits of the Metallized Dyestuffs.") H. Luttringhaus. *Amer. Dyes. Rept.*, 1950, **39**, 152-154. The structure of chrome complex dyes is discussed briefly. An account is given of methods of application and properties of such metallised dyes. Their use for the dyeing of wool and nylon is described. C—**4I.**

Glass Fabrics: Permanent Dyeing and Finishing. Margaret Ralston. *Textile World*, 1950, **100**, No. 3, 120-121. An illustrated note is given of the "Soft-Flex" process whereby any glass fabric can be given a permanent colour and a silk-like soft handle. Silk-screen printing is also made possible by the "Perm-O-Colour" process and glass fibre fabrics coated with metals (lead, copper, nickel and stainless steel) have been developed. C—**4I.**

Polyamide Fibres: Dyeing. ("Über die Probleme des Färbens der Polyamidfasern.") Karl Wojatschek. *Kunstseide u. Zellwolle*, 1949, **27**, 289-291. The dyeing of polyamide fibres such as nylon and Perlon with acetate, direct Palatine fast, chrome, substantive and vat dyes is reviewed. Brief hints are given on the dyeing of nylon or Perlon in blends with wool, cotton, staple fibre, and acetate rayon. C—**41.**

Cellulose Acetate Rayon and Nylon Dyes. "Recent Trends in the Search for New Azo Dyes." II.) A. H. Knight. *J. Soc. Dyers & Col.*, 1950, **66**, 169-177. The properties and constitutions of the various types of dyes which have been used for cellulose acetate rayon and nylon are described and discussed under the headings: Ionamine dyes, dispersed water-insoluble dyes, and water-soluble dyes. There are 79 references to the literature. C—**41.**

Colourless Fluorescent Dyes: Application. E. C. Caspar. *J. Soc. Dyers & Col.*, 1950, **66**, 177-181. An account is given of the application of colourless fluorescent dyes in the textile, paper, detergents, and laundry industries. The "white dyeing" of cotton, rayon, wool, silk and nylon is discussed. C—**41.**

Naphtol AS Dyes: Application; Azo Dye Coupling. ("Die Azofarbstoffkupplung in der Naphtol AS-Färberei.") W. Hees. *Textilberichte*, 1949, **30**, 359-363, 525-528; 1950, **31**, 47-48. The optimum coupling conditions in Naphtol AS dyeing depend chiefly on the base component. Differently substituted amines are classified in four groups according to their constitution and on the basis of their energy of coupling. They may be similarly classified on the basis of rate of coupling. In actual practice the optimum *pH* range of development of the various Naphtol dyeings can be adjusted by (i) the nature of the neutralisation of the diazo solution, (ii) the use of suitable alkali binding agents, and (iii) the use of buffer systems. A tabular summary gives the dyer the *pH* values during coupling that lead to uniform exhaustion of the dyeing in continuous operation, taking into account the maximum dye yield. The *pH* value of a developer solution can be calculated on the basis of physico-chemical formulæ C—**41.**

Coprantine Colours: Dyeing Technique. M. G. Stern. *Textile World*, 1950, **100**, No. 4, 132-135. Notes are given on the various techniques of dyeing with Coprantine colours on cotton, viscose rayon and linen. Their fastness depends on an after-treatment with dilute solutions of copper salts, and five such treatments are recommended. C—**41.**

Nylon Tricot Fabrics: Dyeing. ("Nylon-Tricot Dyeing Calls for Careful Dye Selection.") F. A. Alter. *Textile World*, 1950, **100**, No. 4, 141, 222, 224, 226. The dyeing of nylon tricot fabrics (both nylon itself and nylon blends) is discussed. Care in heat setting of the fabric and subsequent cooling is emphasised. C—**41.**

Orlon Acrylic Fibre: Dyeing. P. L. Meunier and R. J. Thomas. *Rayon & Synthetic Textiles*, 1950, **31**, No. 4, 63-64. Summary of an address. Techniques for the dyeing of Orlon acrylic fibre are briefly reported. With modifications of the usual procedures, acetate, vat and basic dyes and the "Thermosol" process can be used. High temperature dyeing is necessary. C—**41.**

Plastics: Surface Dyeing. *Brit. Plastics*, 1950, **22**, 190-194. Methods are described for the surface dyeing of acrylic sheet, cellulose acetate, cellulose nitrate, vinyl polymers, polythene, casein, polystyrene, nylon plastics, allyl esters, urea-formaldehyde mouldings, and phenol-formaldehyde resins. Some light fastness results are recorded. C—**41.**

Rayon Yarn Packages: Dyeing in Closed Machines. ("Het verven van rayonvezelgaren op cylindrische of conische kruisspoelen in gesloten apparaten.") A. W. Bakker and J. Borggreve. *Enka en Breda Rayon Revue*, 1950, **4**, 10-15. The winding of rayon yarns on cylindrical or conical cross-wound bobbins in such a way as to form a soft yarn package suitable for dyeing is discussed. Manufacturers of closed rayon dyeing machines are listed and various dyeing methods are described. C—**41.**

Vat Acid Dyebaths: Application. ("Die Anwendung der Küpensäure in der Färberei.") Joachim Müller. *Textilberichte*, 1949, **30**, 364-368. *Amer. Dyes. Rept.*, 1950, **39**, 113-116, 118-119. A lecture, giving a review of the various vat acid processes, particularly that for machine dyeing, the padding method employing foulard and jigger, and the continuous processes on the Electro-Fixer. C—**41.**

Wool and Cotton: Vat Dyeing; Interaction with Sodium Salts of Leuco Indigo. V. G. Abozin. *J. Gen. Chem. U.S.S.R.*, 1947, **17**, 1876-1887 (through *Chem. Abstr.*, 1950, **44**, 1711[d]). The electrometric analysis of indigo vats permits quick and accurate determination of the amounts of indigo, free caustic soda, dithionite and sulphite. The use of phosphate buffers in the dyeing of wool is recommended. Theories previously formulated by Poral-Koshits are confirmed. C—**4I.**

Dyes: Identification by X-Ray Powder Diffraction. George Susich. *Anal. Chem.*, 1950, **22**, 425-430. An account is given of the identification of dyes by X-ray powder diffraction. The difficulties arising from polymorphism and the sensitivity, limitations, and applications of the method are discussed. X-ray analysis is compared with other methods of identification of dyes, such as chemical identification, dye tests, and heated specimen microscopy. X-ray patterns of various dyes are shown. C—**4I.**

Dyeing: Loose Stock Machine. ("Novel Loose Stock Machine Said to Improve Dyeing, Assist Handling.") Freeman-Taylor Machines, Ltd. *Dyer*, 1950, **103**, 341-342. The "Loostok" machine is for dyeing loose fibres (particularly wool), rags and waste. The liquor flows through two ducts situated on opposite sides of the cylindrical tank. Loading, unloading and cleaning arrangements are described, and diagrams given of the wool cage unit, tank unit and side ducts. W—**4I.**

(J)—PRINTING

Printed Silk Fabrics: Colour Fastness. F. F. Jacobs. *Amer. Dyes. Rept.*, 1950, **39**, 155-156. The fastness requirements for printed silk fabrics are discussed. Types of dyes which give good all-round fastness are tabulated. C—**4J.**

Screen Prints: Production. *Textile Recorder*, 1949, **66**, February, 62-65; March, 68-69. An illustrated account is given of the principles, practice and technique of screen printing, under the headings (1) screen making (photographic and photo-mechanical), (2) attaching the silk or metal gauze to the screen framework, (3) types of screen gauze, (4) types of frame, (5) screen coatings and lacquers. C—**4J.**

"Teximpex" Screen-Printing Machine. U.S.A. International Co. Inc. *Textile World*, 1950, **100**, No. 3, 142, 144. Brief details are given of a semi-automatic screen-printing machine, known as the "Teximpex". The actual printing is done by hand, but all other operations, such as placing the screen and drying, are fully automatic. C—**4J.**

Nylon Gauze: Application in Screen Printing. ("Nylongaze für Filmdruckschablonen.") Richard Künzl. *Textilberichte*, 1949, **30**, 422-424. Advantages of nylon gauze for use as printing screens are discussed and the preparation and application of such screens are described. C—**4J.**

(K)—FINISHING

Industrial Stoving Ovens. J. N. Taylor. *Gas Heat in Industry*, 1949, 166-168, 170, 172, 174. An illustrated account is given of stoving ovens for industrial finishing processes, both of the static batch type (box ovens), heated by natural or forced convection, and of the conveyor type, heated by forced convection or radiation. C—**4K.**

Cotton Fabrics: Chemical Finishing Treatments. ("Quelques développements dans le traitement du coton.") Georg Heberlein. *Bull. Institut Textile France*, 1949, No. 11, 21-34. A lecture. A brief review is presented of investigations carried out during the past 30 years on the chemical finishing of cotton cellulose materials. A full account is given of the development of mercerisation and of acid-treatment processes. C—**4K.**

Textile Auxiliaries: Production, Properties and Testing. ("Textil-Chemikalien—Ein Beitrag zu deren Systematik, Chemismus und Prüfung.") Gustav Schwen. *Textilberichte*, 1949, **30**, 351-359. The requirements of the textile industry are explained with the aid of a table, showing the fields of application of textile auxiliaries and the sub-division of textile chemicals into (i) inorganic preparations and organic preparations of low molecular weight, (ii) natural organic products, (iii) modified natural products, and (iv) synthetic products. The present state of the synthesis of textile auxiliaries is reviewed with the aid of numerous structural formulæ, and, among others, the formation of urea- or

melamine-formaldehyde resins on the fibre is explained. Methods of testing textile auxiliaries are considered, with special reference to measurements of surface tension and detergent power. C—**4K.**

Textile Fibres and Fabrics: Finishing; Chemical Aspects. H. C. Borghetty. *Rayon and Synthetic Textiles*, 1949, **30**, No. 11, 79-80; 1950, **31**, No. 1, 85-87; No. 2, 81-82; No. 3, 85-86; No. 4, 81-82. Contributions by the dye, plastics and artificial fibre industries to the finishing of textile fibres and fabrics are briefly reviewed. Types of modifications (chemical and physical) in finishing are considered. Chemical finishing treatments for cotton and other cellulose fibres, yielding permanently modified cellulose with mildew-, water-, flame-, *etc.*, repellent properties are briefly described. Applications of synthetic resins and other finishes to cellulose fibres are discussed. Chemical modifications of filamentous cellulose fibres, viscose and acetate rayon, and the animalisation of cellulose fibres are considered. Brief reference is made to nylon, vinyon, silk, and wool fibres, and mothproofing treatments, and shrinkage control methods for wool fibres are reviewed. C—**4K.**

Nylon Fabric Setting Stenter. ("Dry Heat Setting of Nylon.") John Dalglish & Sons. *Dyer*, 1950, **103**, 501, 503. A brief, illustrated account is given of a pin stenter suitable for use in the dry heat (hot air) setting of nylon fabrics, particularly knitted ones. An improved form of automatic uncurler, used in conjunction with the usual driven entering frame, has been incorporated in the new machine. The pieces are fed through the stenter with an air temperature of 420° F. at a speed of about 20 yards per minute. C—**4K.**

(L)—PROOFING

Waterproof "Vapotex" Coated Fabric. Goodyear Tire and Rubber Co. *Textile World*, 1950, **100**, No. 3, 109. A waterproof coated fabric that is impermeable to liquid water but will transmit water vapour has been developed. The fabric is produced by coating a tightly-woven water-repellent fabric of fine yarns with a coating of a solid pigment with a rubber-cement binder ("Vapotex"). The physical properties of the fabric are tabulated. C—**4L.**

"Erifon" Ti/Sb Flame-retardant: Application. ("Durably Flame-retarding Cellulosic Materials.") H. C. Gulledge and G. R. Seidel. *Ind. Eng. Chem.*, 1950, **42**, 440-444. A new method for durably flame-retarding cotton and viscose rayon employs aqueous titanium-antimony complex known as "Erifon" flame-retardant, which, after a two-step process, appears to combine chemically with the cellulose molecule. Methods and problems of application, and properties of a variety of treated fabrics are discussed. Limitations as to durability, dyeing, and fields of application are pointed out. C—**4L.**

Flame-resistant Finishes: Commercial Application. R. W. Little, J. M. Church and Sidney Coppick. *Ind. Eng. Chem.*, 1950, **42**, 432-440. Flame-resistant finishes are divided into those employing (*a*) water-soluble salts, and (*b*) durable finishes. The commercial methods of application of these finishes are described and illustrated in turn. Type (*a*) finishes are applied by spraying, brushing or by commercial laundry treatment. Type (*b*) finishes may be classified as those in which the active retardant is added to the unmodified fibre, and those which depend for flameproofness and durability on a chemical modification of the fibre itself. Double-bath processes and processes in which the flame-resistant agent is applied as a suspension or emulsion are described. There are 33 references to the literature. C—**4L.**

Laundry-resistant Mildew-proofed Textile Fabrics. Samuel Lee. *Amer. Dyes. Rept.*, 1950, **39**, 145-151, 156. A method is described for increasing the resistance of textile fabrics to mildew and rotting by affixing an insoluble fungicide, such as copper-8-quinolate, to the textile by resin-bonding. The permanence of this treatment has been determined by the soil burial test. Experimental data show the effect of the concentration of protective agent used, laundering, curing, and dry-cleaning on the tensile strength retention of treated fabrics. A high resistance to laundering, dry-cleaning, and the action of ultra-violet light is shown by the treated fabrics. The treatment appears to be suitable for both vegetable and animal fibres. C—**4L.**

Clothing: Protection against Salt-marsh Mosquitoes. C. N. Smith and D. Burnett. *J. Econ. Entomol.*, 1949, **42**, 439-444 (through *Brit. Abstr.*, 1950, B III, 62). Some 375 compounds were used to impregnate clothing (at 3 g. per

sq. ft. of cloth) and were tested in the field against *Aëdes tæniorhynchus* and *A. sollicitans*. Of these 92 were effective for more than 21 days in storage and 31 were effective after not less than 36 hours of wear. Six repellents gave particularly good results, including N-cyclohexyl-2-butoxyethoxyacetamide, which was effective after 451 days in the laboratory, or after more than 123 days in storage and 72 hours of wear in the field. Three other compounds, including Indalone, were effective in these tests and could also be applied to the skin. C—**4L.**

"Saturant" Bitumen: Relative Efficiency as a Textile Rotproofing Agent. W. G. Atkins, S. R. Sen Gupta and W. G. Macmillan. *J. Soc. Chem. Ind.*, 1950, **69**, 61-64. A series of laboratory tests of the relative efficiency of bitumen and other materials as textile rotproofing agents has been carried out with a new form of testing apparatus. Pre-treatment with cuprammonium followed by bitumen saturation, or a single treatment with a mixture of bitumen and cresylic acid, provided better rot-protection than bitumen alone. Experimental data are given. C—**4L.**

Water-impermeable, Water-vapour-permeable Coated Fabrics: Development. G. E. Martin, H. S. Sell and B. W. Habeck. *Textile Research J.*, 1950, **20**, 123-132. An account is given of work which has been done to develop a waterproof coated fabric that transmits body perspiration. A suitable porous coating was obtained by using a solid pigment and rubber. A fabric so coated has good flexibility, flex-resistance, resistance to ageing, and resistance to washing and/or dry-cleaning. Field testing and controlled climatic testing have indicated the usefulness of this coated fabric. C—**4L.**

(M)—Subsequent Processes

Thermoplastic Films: Use for Packaging. Harry Barron. *British Plastics*, 1950, **22**, 120-130. An illustrated account is given of the use for packaging of thermoplastic films, including cellulose acetate, ethylcellulose, polyvinyl chloride and copolymers, polyvinylidene chloride, polythene, and rubber hydrochloride films. The properties of the films are tabulated. C—**4M.**

Cloth-room Inspection, Shearing and Packing Plant: Operation. E. D. White. *Textile World*, 1950, **100**, No. 4, 126-127, 220. Improvements made in cloth-room operations (*e.g.* handling, shearing, inspection and folding) in an American textile mill are described briefly with the aid of photographs. C—**4M.**

Patents

Organic Nitrogen Compounds: Manufacture; Use as Textile Assistants. Ciba Ltd. B.P.625,840 of 5/7/1949. An amino-hydrogen atom present in an acetal-like cyclic ether of a primary or secondary propylamine containing at least two hydroxyl groups is exchanged by treatment with an acylating agent or with a mineral acid ester of an aliphatic or araliphatic alcohol, for an acyl, alkyl or aralkyl residue and, if desired, the carbonyl-compound bound in the manner of an acetal is split off by treatment with an acid. The products are used as wetting, dispersing or softening agents, for preventing the agglomeration of fibres in the manufacture of regenerated cellulose staple fibres, as washing agents in acid liquors and also as assistants in wool dyeing, especially in dyeing with pre-metallised dyes. W.

Wool: Recovery from Cellulose Acetate Mixtures. A. Crummett and A. Mellor. B.P.626,801 of 21/7/1949. Cellulose, particularly cellulose acetate, is made friable by treatment with hydrochloric acid vapour in the presence of a swelling agent for the cellulose. Rags (6 cwt.), containing 50 per cent. wool, 25 per cent. cellulose acetate, and 25 per cent. other cellulose fibres, are satisfactorily treated in 2–3 hr. at 80°–100° C., using approximately 120 lb. of a mixture of conc. hydrochloric acid and either glacial acetic acid or 85 per cent. formic acid, the mixture containing approximately 75 per cent. of hydrochloric acid. Standard carbonising apparatus is used. W.

Cellulose Acetate Prints: Protection against "Gas Fading". R. J. Mann, H. C. Olpin and British Celanese Ltd. B.P.628,022 of 25/3/1947: 19/8/1949 (Addition to B.P.569,557). To protect prints or dyeings on cellulosic acetate (or other esters or ethers of cellulose) from fading in the products of combustion of coal gas, a condensation product of an aminotriazine with an aldehyde and an alcohol (*e.g.* melamine condensed with formaldehyde and ethanol) is added to the dye paste and converted into an insoluble resin on the fibre, *e.g.* by

steaming. About 0·5 to 2 per cent. (calculated as melamine) is added to the fabric. Suitable dyes are the 1:4-diamino-anthraquinones. (See B.P.569557; *J. Textile Institute*, 1945, **36**, A371.) C.

Nylon Stockings: Pre-boarding. Luis Heldmaier and British Schuster Co. Ltd. B.P.628,286 of 27/2/1947:25/8/1949. The moisture supplied to a hot pre-boarding chamber through which nylon stockings are carried on an endless conveyor need not take the form of live steam. The invention covers supply of water to provide controlled humidities by (1) providing containers of water near the bottom of the chamber, (2) spraying water into the chamber, or (3) wetting the stockings and passing them through a roller nip before they enter the chamber. C.

Non-toxic Phosphatic Plasticizers for Cellulose Esters and Ethers. British Celanese Ltd. B.P.628,477 of 12/9/1946:30/8/1949 (Conv. 13/9/1945). The drawback to triphenyl and tricresyl phosphates as plasticizers for cellulose is that they are rather toxic. It is now claimed that a series of halogenated phenyl phosphates of the type $(R_nX_m{\cdot}C_6H_{5-(n+m)}O)_3PO$ is free from this drawback [R is alkyl, up to C_5; X is halogen; n = 0, 1 or 2 and m is 1 or more]. They are prepared by the condensation of a halogenated phenol with phosphorus oxychloride in the presence of anhydrous magnesium chloride. C.

Organic Mercury Compound Fungicides: Preparation. F. J. Sowa. B.P. 628,525 of 15/11/1944:31/8/1949 (Conv. 5/8/1943). The claim is for a group of fungicides for textiles, leather, rubber, *etc.*, of the general formula R'·Hg·SCl where R' is a cyclic group. They are made, for example, by the interaction of phenylmercuri-acetate with the sodium salt of 2-mercaptobenzthiazole, ammonium thiophenate, Na diethyldithiocarbonate or K ethyl xanthate. C.

Sheet Folding Machine. F. W. Clegg. B.P.628,533 of 15/6/1945:31/8/1949. This invention relates to a machine for folding sheets, table cloths, paper, *etc.*, accurately though they may vary in length. The timing and regulating device consists of a "discriminator" section designed to measure the length of the sheet as it enters the folding machine and to decide to which length group it belongs, and therefore the number of times it shall be folded, and a "timing" section for setting the folding mechanism in train at the right interval. Details are shown in eleven sheets of machine drawings and there are 47 claims. C.

Salicylanilide Emulsion. Nederlandsche Centrale Organisatie voor Toegepast-Natuurwetenschappelijk Onderzoek. B.P.628,564 of 23/7/1946:31/8/1949. A preparation of salicylanilide (*e.g.* for spraying tomatoes) is obtained by melting it with an oil-soluble emulsifying agent (*e.g.* the sodium salts of the acids prepared by sulphonating spindle oil), dispersing the melt with the help of a surface-active agent (*e.g.* sulphite lye), and/or clay, adjusting the *pH* to about 6-8, and, if desired, adding chromed gelatin to increase the resistance to rain of the sprayed coating. C.

Benzanthrone Derivative Vat Dyes. Ciba Ltd. B.P.628,566 of 26/7/1946: 31/8/1949 (Conv. 27/7/1945 and 4/7/1946). The claims are for a series of vat dyes that give brilliant shades on cotton, especially in the yellow range. They are made by condensing a benzanthrone dicarboxylic acid chloride with two mols. of amine, *e.g.* 1-amino-5-benzoylamino-anthraquinone. Several examples are described. C.

Organo-silicon Water-repellent Pastes. Société des Usines Chimiques Rhône-Poulenc. B.P.628,585 of 4/10/1946:31/8/1949 (Conv. 17/7/1946). A water-repellent paste is prepared by incorporating in organosilicic oils about 40 per cent. of a waterproofed impalpable powder, *e.g.* silica gel, talc, kaolin or fuller's earth. The waterproofing is done by exposing the powder to methylchlorosilane or heating it with an organosilicic resin. When thinly spread on a glass plate the paste provides angles of wetting of 90 to 100°. The examples refer to the use of the paste for improving glass insulators and for making paper water-repellent. C.

Tandem Calender. New York and Pennsylvania Co. Inc. B.P.628,880 of 29/10/1946:7/9/1949 (Conv. 3/11/1945). The 26 claims are for a "super-calender" (for paper, *etc.*) in which the series of roller pairs are arranged side by side so that the material passes through the nips without lapping round any roller. The drawings show a machine with three pairs of rollers and springs for applying the pressure. C.

Pigment-fixing Emulsions: Preparation. Ciba Ltd. B.P.628,882 of 19/11/1946: 7/9/1949 (Conv. 28/11/1945 and 24/9/1946). Emulsions for fixing pigments on textiles employ as the aqueous external phase a solution of acid-casein in alkali containing also an alkyl ether of a hardenable methylol-amide (*e.g.* dimethyl ether of dimethylolurea), and as the oily internal phase a liquid of b.p. 100-200° C., *e.g.* chlorobenzene, white spirit, xylene and other hydrocarbons. C.

Electrostatic or Magnetic Deposition Apparatus for Making Sheets or Webs. W. C. Huebner. B.P.628,983 of 16/9/1946: 8/9/1949. The invention comprises a method of producing a continuous web or separate sheets of material by conveying a foraminous belt past a deposit station where suspensions of materials that can be orientated in an electrostatic field (*e.g.* fibres or resins) or an electromagnetic field are deposited on the belt, and the layer is then dried or set by blasts of air and eventually stripped from the support. There are 30 claims relating to various modifications and apparatus, and three sheets of drawings. **C.**

Fibre Bonding and Laminating Plastics: Production. (1) R. G. Roberts, Roy Hammond and Imperial Chemical Industries Ltd. B.P.629,015 of 14/2/1947: 9/9/1949. (2) Roy Hammond and Imperial Chemical Industries Ltd. B.P. 629,019 of 10/3/1947: 9/9/1949. These inventions relate to the production of new polymerisable materials and polymers that are soluble in organic solvents and are particularly useful for bonding fibrous materials together to form laminates. (1) The materials are reaction products of acrylic ester derivatives such as glyceryl or β-hydroxyethyl methacrylate with methylol, alkoxymethyl, isocyanate or isothiocyanate derivatives such as methylolurea, dimethylolurea or hexamethylene di-isocyanate. (2) The materials contain more than two unconjugated $CH_2{:}C<$ groups per molecule and are obtained by condensing polyhydric alcohols (*e.g.* ethyleneglycol) with the chloroformates of acrylic, methacrylic and/or α-halogen-acrylic monohydroxy esters of dihydric and/or polyhydric alcohols (*e.g.* glycerol or penta-erythritol). C.

Hydraulic Nip Roller Weighting Device. Sellers & Co. (Huddersfield) Ltd. and E. R. Sellers. B.P.629,310 of 12/2/1947: 16/9/1949. The invention relates to a hydraulic system for reducing or increasing the pressure of one nip roller on another in a machine for treating fabrics with liquids, such as washing machines. C.

Metallisable Dipyrazolone Mono-azo Dyes. R. M. Hughes (for J. R. Geigy, A.-G.). B.P.629,412 of 24/12/1946: 20/9/1949. The claim is for a series of metallisable mono-azo dyes obtained by coupling 1-diazo-6-nitro-2-hydroxynaphthalene-4-sulphonic acid with a dipyrazolone urea or thiourea (*i.e.* a condensation product of a pyrazolone with phosgene or thiophosgene). The examples refer to brown-orange dyeings on cellulose fibres which become fast red dyeings when coppered. C.

Highly Polymeric Linear Aromatic Esters: Dyeing. Richard Hardwick, Edmund Waters and Imperial Chemical Industries Ltd. B.P.629,452 of 20/10/1947: 20/9/1949. Esters of the polyethylene terephthalate type ("Terylene" yarn) are dyed by steeping in a solution containing a primary aromatic amine (*e.g. p*-nitraniline or *m*-nitro-*p*-anisidine) and a coupling component (*e.g.* 2:3-hydroxynaphthoic acid), rinsing and steeping in an acidified nitrite bath to effect diazotisation of the amine. The azo components may be applied to fabric in a printing paste. C.

Cobalt Azomethine Dyes: Application to Nylon. General Aniline & Film Corporation (assignees of H. W. Grimmel and H. B. Freyermuth.) B.P.629,473 of 21/11/1946: 21/9/1949 (Conv. 27/12/1945). Nylon is dyed in deep, fast shades by means of azomethine dyes that contain Co in complex binding, obtained, for example, by condensing an *o*-aminophenol with a nitrosalicylaldehyde in the presence of a cobalt salt. The examples refer to yellow, golden and orange dyeings. C.

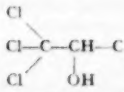
Soluble Phthalocyanine Dyes. Sandoz Ltd. B.P.629,488 of 30/7/1947: 21/9/1949 (Conv. 1/8/1946). Phthalocyanine dyes that are soluble in water are obtained by sulphonating aromatic thio-ethers of the phthalocyanines. The examples refer to very fast yellowish-green, green and bluish-green dyeings on paper, cotton and silk. C.

Felt Hat Manufacture. S. R. Carrington & Sons Ltd. and T. Hulme. B.P. 634,016 of 15/3/1950. A method is described for producing a felt hat with an upwardly curved brim whose rim is curled over on to the upper side of the brim to form a roll which is stitched to the upper side of the brim. W.

Hat Making: Process and Apparatus. Hat Corporation of America. B.P. 634,406 of 22/3/1950. The "R-method" of hardening or starting hat bats consisting of subjecting rolls of equal quantities of folded bats to a slow rolling and a light pressing action (first stage) in the presence of hot water, soaking the bats, and then subjecting them to a relatively faster rolling and harder pressing action (second stage). A novel automatic mechanism is provided for controlling the pressing mechanism of the second stage machine. W.

Papermakers' Felts. Porritts & Spencer Ltd., O. W. Porritt and W. S. Shaw. B.P.634,773 of 29/3/1950. An endless woven fabric has warp or weft yarns, or both, especially the longitudinal yarns, of nylon staple fibre, less than 30 per cent. by weight of the fabric being composed of fibres other than nylon. One or both surfaces are napped to give thickness, resiliency and absorbency to the fabric. The fabric is wholly, or for the main part, impervious to the action of bacteria. W.

Insecticides: Manufacture and Use. J. R. Geigy, A.-G. B.P.634,915 of 29/3/1950. The active ingredient of an insect and vermin killer is the nitro alcohol of the formula



in admixture with a carrier or diluent. Examples relate to its use for moth-proofing wool, feathers, *etc.* W.

Wool Textiles: Production of Decorative Effects. R. W. Hardacre, S. W. Milne and Imperial Chemical Industries Ltd. B.P.635,114 of 5/4/1950. Decorative effects can be produced on wool textiles by local pre-chlorination prior to dyeing. An acidic substance, *e.g.* aluminium sulphate, is printed on the textile, which is then treated in a solution of sodium hypochlorite. Dyeing is carried out with selective acid dyes in the presence of a wool resist agent, *e.g.* Taninol WR. W.

Felt Hat Hoods and Similar Flexible Conical Bodies: Drying. Taylor Wordsworth & Co. Ltd. and F. Denham. B.P.635,162 of 5/4/1950. Felt hoods, filter bags, and similar flexible conical bodies are pushed apex first into open-work frames which are continuously transported through a drying chamber. The frames are constructed to hold the hoods in a pleated shape, with sufficient friction to resist the displacing action of the circulating air in the drying chamber. W.

Bleaching Wool Grease. E. R. Woodward and I. Malmstrom (to Mathieson Chemical Corporation). U.S.P.2,481,463 of 6/9/1949. Wool grease is bleached by subjecting it to the combined action of sodium chlorite and sodium hypochlorite in the presence of water in neutral or alkaline solution, preferably at *pH* 9-10. A permanent bleach is obtained if the hypochlorite is added to the wool grease before the chlorite. W.

5—ANALYSIS, TESTING, GRADING AND DEFECTS

(A)—Fibres

Textile Mill Standards Department: Organisation. ("What Do You Want to Know about Standards Departments.") C. W. Bendigo. *Textile World*, 1950, **100**, No. 3, 101-107. Information is given, for the guidance of mill managers, on the establishment and organisation of a standards department. The duties of such a department, its administration, the type of personnel and equipment needed and costs are discussed. C—**5A.**

Cotton: Relation of Fibre Length to Yarn Quality. E. H. Helliwell. *Textile World*, 1950, **100**, No. 3, 129, 252, 254. Answers are given to five questions on the relation of fibre length to yarn quality, the emphasis being placed on reducing excessive short fibres in a mixing. C—**5A.**

Cotton and Rayon Fibre: Staining Test for Spinning Quality. ("Spinning Quality of Cotton; New American Staining Test for Thin-walled Fibres.") *Textile Mercury & Argus*, 1950, **122**, 593-597, 605, 636-640, 681-682. The writer reviews literature on Goldthwait's staining test for thin-walled cotton[1] and similar tests; and its extension to rayon by Armfield and Boulton.[2]. ([1]*J. Textile Institute*, 1947, **38**, A513; [2]1949, **40**, A376.) C—**5A.**

Hairs: Wetting. ("The Stability of Structures at a Fluid Interface.") D. J. Crisp. *Trans. Faraday Soc.*, 1950, **46**, 228-235. A theoretical analysis is made of the factors governing the stability of a system of hairs lying at a fluid interface. This shows (i) that if a hair is displaced in a direction perpendicular to the main direction of the surface there is a net restoring force bringing the displaced hair back to the plane of the others; (ii) that if a hair or group of hairs is displaced horizontally along the interface there will be (*a*) an increased vertical force in the direction of the applied pressure acting on these hairs which are spaced farther apart, (*b*) a horizontal displacing force acting in a sense which would increase the original displacement. It is suggested that the principles described may have a bearing on the behaviour of textiles in contact with water. C—**5A.**

Single Fibres: Bending Experiments. F. H. Müller. *Kolloid Z.*, 1949, **113**, 53-59 (through *Brit. Abstr.*, 1950, B II, 46). The value of bending experiments in determining the mechanical properties of fibres and methods of carrying them out and interpreting the data are discussed. Three methods of making such tests are described and experimental difficulties are discussed. Hysteresis curves obtained on single fibres are reproduced. C—**5A.**

Silk Fibroin: X-Ray Structure. ("A New Type of Lattice with Large Periods in Silk.") O. Kratky, E. Schauenstein and A. Sekora. *Nature*, 1950, **165**, 527-528. A further modification[1] of silk has been found which can be prepared by treating "silk II" with 0·5 per cent. sodium hydroxide at 60-70° C. for about a minute. The name "silk III" is suggested. Characteristics of its X-ray diagram are reported. ([1]*J. Textile Institute*, 1950, **41**, A204.) C—**5A.**

Keratin Fibres: Rubber Elasticity. E. Elöd and H. Zahn. *Kolloid Z.*, 1949, **113**, 10-17 (through *Brit. Abstr.*, 1950, B II, 46). The authors have examined the effects of temperature variation and of water, 1·0 N sodium hydroxide, sodium sulphide (1 per cent.), and trichlorethylene on the elongation at break, Young's modulus, and linear thermal expansion coefficient, α, of horse hairs in the dry and swollen state. In water and trichlorethylene, α is positive, and remains so even after partial reduction of the cystine cross-links. Supercontraction follows complete breaking of the H-bonds between the peptide chains (by action of 40 per cent. aqueous resorcinol); α becomes negative. Sodium hydroxide and sodium sulphide also reverse the sign of α. The appearance of negative α is accompanied by a large decrease in Young's modulus. The data support the view that keratin fibres behave like normal solids, but may acquire rubber elasticity after treatment which ruptures the bonds between the peptide chains. C—**5A.**

Poly-hexamethylene-dihydroxyadipamide Fibres: Mechanical Properties. G. Beauvalet and G. Champetier. *C. r. Acad. Sci.*, 1949, **229**, 209-210 (through *Brit. Abstr.*, 1950, B II, 48). Studies of the mechanical properties of poly (hexamethylene-α:α'-dihydroxyadipamide) fibres show that ageing is accompanied by crystallisation and by increased H-bonding. The macromolecules can only be orientated after breaking these H-bonds and the polymer then behaves in the same way as the non-hydroxylated compound (nylon). Heating the polymer to just below the softening point (158° C.) induces interaction and dehydration of OH-groups with formation of ether links, and an increase in strength, rigidity, and crystallinity, together with a diminution in break extension. Water markedly alters the mechanical properties due to fixation of water on the OH-groups and destruction of H bonds. C—**5A.**

Cellulose: Degradation; Microscopic Examination. C. W. Hock. *Textile Research J.*, 1950, **20**, 141-151. The examination of degraded cellulose by means of the light- and the electron-microscope is discussed. The degradation of natural cellulose by chemical agents (acid and alkali), by physical means and by biological agents is considered. Microscopic examination reveals the fibrillar structure of cellulose and the diameters of the fibrils appear to be little changed by degradation. This observation is discussed in relation to the disposition of

the crystalline and amorphous regions of the cellulose chains. Several photomicrographs and electron-micrographs are given showing cellulose variously degraded. There are 38 references to the literature. C—**5A.**

Cotton Fibres: Perimeter Measurement. Norma L. Pearson. *Textile Research J.*, 1950, **20**, 152-164. A method is described for obtaining information on perimeter differences in mature cotton fibres by measuring the perimeters of the fibres in the primary-wall stage. Young fibres are cut from the seed, stained, placed on a glass slide, and dried. The width of the collapsed fibre is equal to half of the perimeter at the point measured. Perimeters have been measured for nine types of cotton to represent a range in perimeters and are compared with measurements of fibre fineness made on mature fibres of the same cottons. Results indicate that perimeter measurements made at the primary-wall stage give reliable information regarding the perimeters of mature fibres. C—**5A.**

Cotton in the Boll: Differential Dyeing Test. ("Special Dyeing of Cotton on the Seed Gives Visual Evidence of Changes During Fibre Development.") C. F. Goldthwait, H. O. Smith and Florence T. Roberts. *Textile Research J.*, 1950, **20**, 100-104. A differential dyeing test,[1] previously used to distinguish between thick- and thin-walled cotton fibres, has been applied to give visual evidence of a fundamental submicroscopic change in cotton as it dries when the boll opens on the plant. Structural differences between thin- and thick-walled fibres are indicated. ([1]See *J. Textile Institute*, 1947, **38**, A513.) C—**5A.**

Periodate-oxidised Cotton: Stabilisation. R. E. Reeves and F. F. Darby. *Textile Research J.*, 1950, **20**, 172-174. Cotton sewing thread, 128/5, has been subjected to various levels of oxidation by periodic acid. After drying, a portion of the thread at each oxidation level was treated with sodium chlorite and a further portion with diazomethane in ether. One half of each sample in each series was weighed and treated with sodium carbonate solution. The loss in weight and the breaking load of each specimen were determined. Graphs showing the strength retention after alkali treatment, and the alkali-solubility, at the various oxidation levels are given. C—**5A.**

Sea Island Cotton: Moisture Hysteresis. J. C. Guthrie. *J. Textile Institute*, 1950, **41**, T124-T125. Changes in moisture regain of textile fibres during small changes of relative humidity are illustrated by some results on the rate at which a sample of scoured and bleached Sea Island cotton yarn attained moisture equilibrium in a modified McBain-Bakr quartz spring balance during the R.H. cycle 31·1→44·8→30·1 per cent., and another cycle in the neighbourhood of 72·9 per cent. Hysteresis effects are shown. C—**5A.**

Cut Filaments: Fibre Length Determination. ("Zur Begriffsbildung bei der Faserlängenmessung.") (1) F. Walz and H. Köb; (2) Hans Böhringer. *Textilberichte*, 1949, **30**, 337-339, 339. (1) The authors put forward arguments against the introduction of the concept of "fibre cross-section curve", previously proposed by Böhringer[1] and lay down rules for the development of a clear and unambiguous terminology. (2) The author justifies the use of the "fibre cross-section curve" on the basis that fibre cross-section or the cross-section of a fibre-length group is the only universal magnitude which eliminates all sources of error in fibre length determinations. ([1]*J. Textile Institute*, 1949, **40**, A375.) C—**5A.**

Textile Fibres: Properties that Influence Spinning. ("Welke vezeleigenschappen beïnvloeden de verspinning van een vezelmateriaal en hoe kan men ze meten?") H. L. Röder. *Enka en Breda Rayon Revue*, 1950, **4**, 1-8. Fibre properties which directly influence spinning, and their measurement, are discussed and illustrated graphically under the headings: (1) Count; (2) Tensile strength; (3) Fibre length; (4) Geometrical structure; and (5) Slipperiness (*avivage*). Apparatus and methods for measuring the latter and the friction coefficient are described and illustrated. C—**5A.**

Ethylcellulose: Mechanical Properties and Chain Length Distribution. ("Mechanical Properties of High Polymers as Functions of the Shape of the Distribution Curve." Part IV.) P. C. Scherer and R. D. McNeer. *Rayon and Synthetic Textiles*, 1950, **31**, No. 2, 53-55; No. 4, 54-56. Blends of fractions of ethylcellulose, produced as described previously,[1] have been prepared to give varied distribution curves and the effect of such curves on the mechanical properties of films cast from them has been observed. From a study of the shape of the distribution curves a so-called "shape factor" has been obtained

which can be correlated with mechanical properties in a fairly satisfactory manner. Various curves showing the change in mechanical properties with the change in average degree of polymerisation (D.P.), and other graphs and results are presented. The mechanical properties of films of ethylcellulose improve with an increase in the average D.P. up to about 200, beyond which there is little improvement. (*J. Textile Institute*, 1950, **41**, A43.) C—**5A.**

Rayon Fibre Cross Sections: Electron and Light Microscopy. P. H. Hermans. *Textile Research J.*, 1950, **20**, 105-108. Sections less than 1μ thick of paraffin-embedded viscose rayon fibres were obtained by means of an ordinary Leitz sledge microtome. An electron micrograph of a section fragment shows the lobed surface of the filament and the presence of numerous small voids in a rather thick cortical layer. Ordinary micrographs, phase contrast pictures, and pictures taken between crossed nicols of other sections of the fibre show the same structure. C—**5A.**

Polyamides: Crystal Structure. R. Gabler. *Naturwissenschaften*, 1948, **35**, 284-285 (through *Brit. Abstr.*, 1950, B II, 172). The polarising microscope is used to detect crystallisation tendencies in polyamides of technical degrees of polymerisation. Photomicrographs of solidified Perlon (ε-hexolactam polymer) and nylon (polyhexamethylene-adipamide) melts and of Perlon recrystallised from benzyl alcohol which are reproduced, give evidence of crystalline structure. C—**5A.**

Polyamide Fibres: Contraction in Phenol. ("Über die Kontraktion von Polyamidfasern in Phenol.") E. Elöd and H. Zahn. *Textilberichte*, 1949, **30**, 349-350. In continuation of the observations by the same authors[1] on the lengthwise contraction of polyamide fibres in dilute aqueous solutions of phenol, the behaviour of four commercial products (Igamid 6 A-rayon, Perlon L, nylon, and the polyurethane fibre Perlon U) has been investigated. The contraction at room temperature increases steadily with increasing concentration of the phenol solution until softening takes place. There are noticeable differences between the individual polyamides which may be used for their characterisation. (*J. Textile Institute*, 1949, **40**, A332.) C—**5A.**

"Rhovyl" Polyvinyl Chloride Fibre: Properties. ("French Synthetic Fiber Features Durability.") Société Rhovyl. *Textile World*, 1950, **100**, No. 4, 120-121. Brief details are tabulated of the qualities, properties and uses of a series of new French polyvinyl chloride fibres, *viz.* Rhovyl, Fibtovyl, Thermovyl and Isovyl. These fibres will not burn, conduct heat, or absorb moisture. C—**5A.**

Synthetic Polymer Fibres: Structure, Manufacture and Properties. ("The Structure of Textile Fibres." XIII.) F. Howlett. *J. Textile Institute*, 1950, **41**, P124-131. The chemistry of synthetic polymer fibres is discussed briefly and an account is given of the manufacture, properties, and uses of Vinyon, Orlon, nylon, Terylene, Velon or Saran, polyethylene, and Pe Ce fibre. C—**5A.**

Undrawn Nylon Fibre: Skin Effect and Swelling. ("Influence of Molecular Structure on Swelling of Textile Fibres.") J. M. Preston. *J. Textile Institute*, 1950, **41**, T126. It has been observed that undrawn nylon possesses a thin doubly refracting skin. It is suggested that this skin would account for the anomalous swelling of nylon observed by Abbott.[1] (See *J. Textile Institute*, 1950, **41**, A307.) C—**5A.**

Wool, Silk and Polyamides: Absorption of Caustic Soda and Basic Dyes. ("Die Aufnahme von Natronlauge sowie von basischen Farbstoffen durch Wolle, Seide und Polyamide.") E. Elöd and H. G. Fröhlich. *Textilberichte*, 1949, **30**, 405-410. Wool and silk behave similarly towards caustic soda; absorption of NaOH begins at *pH* 7·0, increases slowly at first, rises sharply at *pH* 11·5 and reaches a saturation value at *pH* 13·0-13·5. The binding of NaOH is ascribed to the carboxyl groups of the amino acids, the phenolic hydroxyl group of tyrosin, and the peptide groups. The absorption of basic dyes is shown to pass through a maximum. The behaviour of polyamides towards NaOH and towards basic dyes is essentially analogous to that of the protein fibres. (See also *J. Textile Institute*, 1949, **40**, A370, and 1950, **41**, A82.) C—**5A.**

Wool: Examination of Damage. A. D. J. Meeuse, H. A. J. Hietink and C. J. Gorter. *Meded. Vezelinstituut T.N.O.*, 1949, No. 97 (in English). The concept "damage in wool" is discussed, and defined as follows: "Wool is damaged if the amount of damage is so much higher than the usual percentage for that

particular type of wool that the serviceability is impaired or undesired effects are encountered either during later stages of the manufacturing process or during the actual use of the finished goods." This definition is related to the examination of damage in wool. Possible causes of damage, including successive and cumulative damage, are listed and shown in tabular form. Other tables contain a classified list of references, 292 in all, to methods which have been used for determining damage in wool. A tentative scheme for identifying damage will appear in a further report. W—**5A.**

Wool: Dependence of Fineness on Fibre Length. ("Über die Abhängigkeit der Wollfeinheit von der Haarlänge.") M. Matthes. *Text. Rundschau*, 1950, **5**, 186-190. The relation between wool fineness and length was investigated for 14 tops. A sample of about 1,500 fibres was taken from a top, and sorted into length groups. The root-mean-square fibre diameter of each length group was found by weighing. The classification of tops on a length basis for spinning purposes is suggested. W—**5A.**

Wool: Length Measurement. ("Les Longueurs de la Laine.") F. Monfort. *L'Ingénieur Textile*, 1950, No. 377, 2-21. Numerical and weighted length distributions of wool slubbing, sliver and yarn are discussed. A table shows the different mean lengths obtained by different methods of measurement. This question is discussed with reference to the Wool Industries Research Association and modified Wool Industries Research Association methods, and to sampling methods using a comb sorter. The matter is then discussed as it affects (1) length analysis by the wool merchant, and (2) length in relation to the spinning power and regularity of the yarn. In the appendix, Palmer's notation of mean lengths (*J. Textile Institute*, 1948, **39**, A84) is described, and recommended for general adoption. W—**5A.**

(B)—YARNS

American Artificial Fibre Yarns: Denier and Filament Numbers. H. R. Mauersberger. *Rayon and Synthetic Textiles*, 1950, **31**, No. 3, 58-60. Details of recent changes in the denier and filament numbers of American artificial fibre yarns are reported. Data for viscose yarns, cellulose acetate yarns and non-cellulosic yarns are tabulated. (See also *J. Textile Institute*, 1949, **40**, A266 and 1950, **41**, A134.) C—**5B.**

Yarns: Strength and Extension; Effect of Twist. ("Der kritische Überdrehungspunkt in der Garnspinnerei und sein Einfluss auf die Festigkeit und Dehnung der Garne.") Ernst Möller. *Kunstseide u. Zellwolle*, 1947, **27**, 329-331. The relationship between strength and twist of yarns is discussed. Principles underlying the construction of strength testers are reviewed and the effect of breaking rate and of the length of the clamped sample on the test results is considered. Finally, established strength standards for natural silk are summarised. C—**5B.**

Yarn Abrasion Tester: Application in Sizing Trials. ("Modified Abrasion Test for Warp Sizing Study.") J. W. Stallings and D. L. Worth. *Textile Industries*, 1950, **114**, No. 3, 94-98. A modified crossed yarns abrasion test carried out on the Walker Abrader, is described and illustrated. The test produces fuzziness in the abrading zone which is somewhat comparable to loom action. The graphical expression of results is explained. The test is said to provide reliable evaluation of warp sizings on a small scale. C—**5B.**

Yarn Count Twist-correction Chart. ("Contraction Requires Draft Correction.") J. F. Bogdan. *Textile World*, 1950, **100**, No. 4, 107, 228. The actual yarn count is affected by the contraction which takes place on twisting yarn. A chart is presented which gives the relationship between cotton counts before and after twist insertion, from which the corrected count can be found directly. The theoretical basis for the chart is outlined. C—**5B.**

Yarn Testing Instruments. ("Contrôle des propriétés mécaniques des fils avant leur utilisation au tissage.") Jean Henno. *Bull. Institut Textile France*, 1949, No. 11, 9-19. Three instruments for determining the mechanical properties of yarns are described and illustrated: (i) A constant-tension device, the "stato-tensiometer" which is essentially a Frenzel-Hahn tester adapted for rayon yarns. (ii) A constant-elongation device, the "Extensiometer", which is distinguished from similar instruments in that it has two cycles of action, adjustment of a given yarn section and stretching. These two tests permit the

prediction of the number of breaks likely to occur during weaving. Finally, (iii) an automatic dynamometer is described, which has been designed for testing cotton yarns over lengths of 40 mm. It records the breaking load and permits the drawing-up of a diagram of the strength of the yarn under test at points fairly close to each other. About 500 tests per hour may be carried out with this instrument. C—**5B.**

Twisted Rayon Yarns: Effect of Moisture on Tensile Properties. J. B. Maginnis. *Textile Research J.*, 1950, **20**, 165-171. The effect of moisture upon certain physical properties of 150/40 twisted rayon yarn has been studied. Data are provided on changes in stress, dimensions, and moduli for the yarn and component filaments. On drying at constant length, stress increased for low twist, remained fairly constant for medium twist and decreased for high twist. Changes in length under constant load agreed with these observations. The modulus decreased with increasing twist and increasing relative humidity. An expression relating filament and yarn properties has been derived. The agreement between calculated and observed stress values is fair. C—**5B.**

Viscose Twisted Continuous Filament Yarn: Physical Properties. ("The Effects of Denier, Elongation and Strength on the Behaviour of Twisted Singles Yarn.") E. J. Sparke. *J. Textile Institute*, 1950, **41**, P69-78. An attempt is made to show how the behaviour of twisted continuous filament viscose yarn depends on the physical properties of the yarn. The only properties that appear to have any important bearing on the behaviour of the twisted yarn are diameter and elongation. Tenacity and filament denier have little or no influence. Theoretical results are supported by experimental data on the tensile properties of yarns twisted at constant length, twisted when free to contract, and twisted under partial contraction. A discussion of the paper is reported. C—**5B.**

(C)—Fabrics

American, British, and German Light Fastness Standards: Uniformity of Grading. I. H. Godlove. *Amer. Dyes. Rept.*, 1950, **39**, 215-221. The effect of exposure to sunlight and in the Fade-Ometer has been determined for American, British, and German light-fastness standards. Changes of colour (fadings) measured spectrophotometrically and expressed in terms of quantitative units of fading (fading indices), in specified times, are used to investigate the uniformity of grading of the three national sets of standards. Experimental results are given in tables and graphs and indicate that the American standards are much more uniformly graded than the British or German standards, especially in sunlight exposure. C—**5C.**

Defraine Fabric Wear Resistance Tester. ("Determination de la résistance à l'usure des tissus.") Messrs. M. Defraine. *Textielwezen*, 1949, **5**, No. 9, 121-123; *Rayonne*, 1950, No. 5, p. 131, *etc.* The Defraine abrasion tester (*Usomètre* M.D.) is described and illustrated. Even, known tension is applied to a circular sample of material by means of a round screw nut. The abrader is a file of stainless steel, deeply grooved, ensuring reproducible results. The circular sample is brought into contact with the file along its diameter and is turned slowly around an axis perpendicular to that of the file. Abraded fragments and dust are removed by a ventilator. The sample under test is illuminated by two lamps, one acting by reflexion and the other by transparence, thus permitting constant observation of the sample during the test. C—**5C.**

Cotton Industrial Fabrics: Cost and Durability. W. F. Busse and H. Wakeham. *India Rubber World*, 1949, **120**, 573-576, 634 (through *Brit. Abstr.*, 1950, B II, 48). The importance of cotton as a textile fibre is discussed with respect to its availability, its cost is compared with other natural and synthetic fibres, and its physical properties, particularly strength, flexibility, and abrasion-resistance are detailed. Factors likely to reduce the cost of production are considered. Tables and graphs compare the cost since 1920, strength, elongation, and change of vibration life under various conditions, of cotton with other fibres. Figures also given show the effect on breaking strength and elongation of the treatment of cotton and rayon tyre cords with resins. C—**5C.**

Defective Woollen and Worsted Yarns and Fabrics: Examination and Correction. Foster Pickles. *Textile Recorder*, 1948, **66**, August, 61-64; October, 57-59; December, 70-73; 1949, **66**, February, 66-68. Practical hints are given on methods for examining and correcting defects in woollen and worsted goods,

under the headings: defective raw material (including sheep branding marks), carding, combing, worsted drawing, winding and warping (including warp stripiness), weaving (including weft bars), stains and their removal, defects due to holes and cloth construction. The examples include materials with cotton warps. C—**5C.**

Dyed Textiles: Damage Prevention. ("Satisfying the Consumer.") *Dyer*, 1950, **103**, 401-402. Some ways in which faulty dyeing or the misuse of dyed materials can give rise to damaged or unsatisfactory finished fabrics are discussed. Fastness, penetration and light tendering are considered; these factors must be taken into account when selecting a dye. C—**5C.**

Fabrics: Analysis. ("De l'analyse d'un tissu comment s'y prendre.") R. Sarlet. *Textielwezen*, 1950, **6**, No. 1 17-19; No. 4, 53-55. In continuation of a series of articles,[1] instructions are given on how to analyse fabrics composed of one warp and three wefts, or of three warps and one weft, fabrics whose weave cannot be distinguished, and double fabrics which are (*a*) joined by the warp, (*b*) joined by the weft, and (*c*) joined by a special warp. ([1]See *J. Textile Institute*, 1949, **40**, A247.) C—**5C.**

Fabrics: Thermal Behaviour at Flaming Temperatures. Sidney Coppick, J. M. Church and R. W. Little. *Ind. Eng. Chem.*, 1950, **42**, 415-418. The protective quality of a fabric may be defined, thermodynamically, as a function of the quantity and intensity of the heat supplied and generated, the area over which it is effective, and the coefficient of heat transfer. Damage or injury to the wearer results from the calorific transfer through and propagation along the fabric. Fabric combustion is discussed from the aspects of the decomposition reaction, the oxidation of volatile and solid decomposition products, and the thermal barrier. Tests show that because their thermal conductivity is similar, cellulose fabrics which are adequately flame-proofed and glow-retarded have thermal protection qualities equal to fabrics made from the most inert fibres. C—**5C.**

Fire-retardant Textiles: Properties of Importance to the Consumer. K. H. Barnard. *Ind. Eng. Chem.*, 1950, **42**, 430-432. Effects of fire-retardant treatments of textiles which may be of importance from the user's viewpoint are briefly discussed. These include danger of dermatitis, loss of tensile strength, drape and handle, comfort factor, and effect on colours. The potential market for fire-retardant textiles is briefly surveyed. C—**5C.**

Flame-resistant Fabrics: Evaluation. J. M. Church, R. W. Little and Sidney Coppick. *Ind. Eng. Chem.*, 1950, **42**, 418-427. Ideal flame-proofing requirements for textiles are enumerated and discussed. Methods for evaluating flameproof fabrics include vertical, horizontal and angle flame tests and flame propagation tests. Some flame test cabinets are illustrated. Tests employed to determine the effect of the flame-proofing treatment on the strength of the fabric are described. Leaching, laundering, and exposure tests are used to measure the durability of the treatment, and physiological effects of flame-proofing, such as toxicity, skin abrasion and heat load, are also determined. Three tables give data on (*a*) Comparative evaluation of water-soluble fire retardants; (*b*) Evaluation of urea derivative/phosphate treated fabrics; and (*c*) Evaluation of pigment/resin type treated fabrics. C—**5C.**

Flame Resistant Textiles: Statutory Requirements. G. S. Buck. *Ind. Eng. Chem.*, 1950, **42**, 428-430. Some of the statutory requirements (laid down in California) for flame resistance in textiles are briefly discussed. The California restrictions are based on tests with the 45° inflammability tester and include at present two groups of materials: (i) napped, brushed and pile fabrics, and (ii) sized and coated fabrics. C—**5C.**

Textile Fabrics: Inflammability; Measurement. ("A Study of Some of the Factors Involved in Measuring Flammability of Consumer Textiles.") E. P. Johnstone. *Amer. Dyes. Rept.*, 1950, **39**, 194-197. An illustrated account is given of the measurement of the inflammability of textile fabrics by a modification of the American Association of Textile Chemists and Colorists inclined tester, in which sample supporting wires were eliminated by using a newly designed sample holder, and an electric system of timing was installed. Experimental results are given and the reproducibility of test results is discussed. It appears to be dependent primarily on fabric variation and differences in nap or pile of the fabric. C—**5C.**

Tropical Clothing: Selection. C. P. Yaglou and M. N. Rao. *J. ind. Hyg.*, 1947, **29**, 140-142 (through *Brit. Abstr.*, 1950, A III, 153). The rate of sweat-secretion was used as an index of discomfort, since it is the most reliable index in hot humid conditions. Under such conditions, the rate of sweat secretion was lowest and the evaporative efficiency highest when the subject was naked; loose-fitting cotton pyjamas obstructed evaporative heat loss least, a tight-fitting cotton suit, and even more a poplin jungle suit, increased the rate of sweating and diminished evaporative efficiency. The jungle suit was designed to keep out mosquitoes, and it seems that the heat and mosquito problems may have to be solved separately. C—**5C.**

Cellulosic Textiles: Swelling and Shrinkage. ("Gonflement et retrait des textiles cellulosiques artificiels.") (Mrs.) F. Girard. *Bull. Inst. Textile France*, 1949, No. 9, 37-52; No. 11, 35-55. The swelling and shrinkage behaviour of cellulosic fibres, yarns and fabrics has been studied. The transverse swelling of the constituent fibre causes a transverse swelling of the yarn which, together with the twist of the fibres, produces a lengthwise shrinkage, reading about 4 to 5 per cent. for ordinary viscose yarns. On drying the yarns retain a shrinkage substantially equal to that on wetting. Rayon and staple fibre fabrics differ in their behaviour on wetting. Whereas the former shrink little (not more than 5 per cent.), the latter show considerable warpwise contraction (10 to 15 per cent.). In fabrics of very close texture the phenomena of swelling and shrinkage are counteracted to some extent by the reciprocal blocking of the yarns of the material in the swollen condition and can only come about slowly in the course of separated washings. Thus for both yarns and fabrics it is the increase in lengthwise contraction of the yarn on the fibre that causes shrinkage on wetting and drying. All water-proofing treatments which reduce the volume swelling of the fibres reduce the transverse swelling of the yarns. Shrinkage of the yarn on wetting decreases, and may be even be cancelled out or give rise to stretching. The production of a fabric that is unshrinkable on wetting and washing requires knowledge of the behaviour of the constituent yarn towards water and of the limit density of picking. The latter may be calculated theoretically from the diameter of the yarn and its rate of transverse swelling in water. Experimental results are presented in diagrams and tables. C—**5C.**

Dyeings: Standardised Fastness Tests. ("Normalisation: Essais de solidité des Teintures.") Institut Textile de France. *Teintex*, 1949, **14**, 519-525. Tentative standard methods are described for determining the fastness of dyeings to (i) laundering, (ii) milling, (iii) rubbing, (iv) carbonisation, (v) water and sea water, and (vi) dry and damp ironing. C—**5C.**

Dyeings: Fastness; Standardisation of Systems of Classification. (1) ("Gegenwärtige Tendenzen in der Vereinheitlichung der Farbechtheitsbestimmungen.") (2) ("La standardisation des essais de solidités de teintures, idées et tendances actuelles.") Claude Zuber. (1) *Textil-Rundschau*, 1950, **5**, 15-19, 41-49. (2) *Teintex*, 1950, **15**, 9-29. A lecture. Following on Dr. Ris' account of the historical development of standardisations of dye fastness determinations[1] the lecturer deals with the principles underlying an ideal fastness system and present-day tendencies. Light fastness determinations are discussed first with particular reference to the use of the Fadeometer. Other fastness tests are considered together, and mention is made of the use of such apparatus as the Launder-Ometer, the Wash-Wheel, the Crockmeter and others. Attention is paid to the basic requirements for standard tests, namely adaptation to practical conditions, elimination of individual influence of operator and examiner, self-control of the test, and elimination of any national specialisation in the choice of dye types. A description is given of a simple device which permits the estimation of the degradation of dyeings in any strength. It consists of two concentric disks which are mobile with respect to each other, and are each graded in shades of grey ranging from white to black. Finally, reference is made to the work of the Franco-Swiss Fastness Commission. (*J. Textile Institute*, 1950, **41**, A261 and A310.) C—**5C.**

Textile Fabrics: Creasing and Creaseproofing. D. D. Gagliardi and I. J. Gruntfest. *Textile Research J.*, 1950, **20**, 180-188. Problems and aspects of the creasing and creaseproofing of textiles are surveyed. The bending of monofilament and multifilament materials is considered and it is shown that the multifilament character of a yarn minimizes the deformations produced when

a fabric bends. Fibre properties and creasing, and the chemical modification of fibres to increase elastic recovery are discussed. Figures are given showing the modification of fibre properties (viscose rayon) and improvement in crease resistance (rayon and cotton) produced by acid-formaldehyde treatment. The creaseproofing agent must have the property of forming cross-linkages in the cellulose and must also be diffusible in the cellulose phase. Experimental results showing the importance of the latter property are given. The application of creaseproofing agents to rayon and cotton fabrics is mentioned and differences among various fabrics in their response to these agents are tabulated. Creaseproofing agents increase the modulus of the fibre which results in a decrease of the strength properties of the fabric. C—**5C.**

Textile Fabrics: Inflammability Tests. ("Problems in Textile Flammability.") G. S. Buck. *Textile Industries*, 1950, **114**, No. 3, 101-102. The problem of measuring the fire risk of textiles is briefly discussed. It is shown on the basis of inter-laboratory tests that no inflammability tester is yet available which will yield consistent results. C—**5C.**

Wool Fabrics: Abrasion Testing. ("Onderzoekingen aangaande textielslijtage. De schuurproef als criterium ter bepaling van de textielslijtage.") F. H. Germans. *Mededel. Vezelinstituut T.N.O.*, 1948, No. 91, 16 pp. Two different aspects of the abrasion testing of textiles are considered. In both cases the drawback of the abrasion test is its unsatisfactory reproducibility. An illustrated description is given of an apparatus specially designed to investigate reproducibility. It employs a strip of emery paper as abradent. Preliminary experiments were carried out on homogeneous materials, *i.e.* glass, plastics and keratin blocks. It was found that the loss of weight of the sample was independent of the surface area of the sample and directly proportional to the normal load, the factor of proportionality being a property of the material. This result was confirmed with textiles having different weaves. A microscopical comparison of wool fibres taken from worn-out and from abraded fabrics showed that the fibrillar ends, characteristic of worn-out wool, did not occur in abraded samples. This is considered as a strong argument against the usefulness of an abrasion tester as an apparatus to imitate the process of actual wear. C—**5C.**

Burling Operation Simplified. *Text. Industries*, 1950, **114**, No. 1, 167. The burling machine described consists of an inspection board mounted on a slight incline and the fabric is drawn slowly across the board by an electric motor equipped with a speed reducer. A slot across the centre of the board is covered with a piece of fine copper screen wire, and light passes through the fabric to facilitate inspection. A steam spotter is used to remove oil spots, and a yardage measure is attached. The machine may be operated continuously by one person. W—**5C.**

(D)—Other Materials

Laminated Plastics: Heat Resistance. L. E. Sieffert and E. M. Schoenborn. *Ind. Eng. Chem.*, 1950, **42**, 496-502. A procedure has been developed for evaluating the heat resistance of laminated plastics in terms of the critical thermal instability temperature. The rate and extent of thermal decomposition are measured by experimentally determining the loss in weight with time of a number of small specimens maintained at a series of fixed temperatures for periods up to 72 hours. The temperature at which the material becomes thermally unstable is found by a simple graphical treatment of the data. Results obtained for eleven different laminates including two cotton fabric-base phenolics are presented and their relative critical thermal instability temperatures compared. Glass-base silicones are far superior to all other materials tested. C—**5D.**

7—LAUNDERING AND DRY-CLEANING

Carboxymethylcellulose Detergents: Action. J. Voss. *Angew. Chemie*, 1948, **60**A, 253-254 (through *Brit. Abstr.*, 1950, B II, 76). The detergent action of mixtures of (i) water-glass, (ii) alkylated naphthalenesulphonic acid, and (iii) carboxymethylcellulose is due to the joint action of (i) and (iii). Only with very greasy washing is (ii) effective, and then merely as a dirt-dispersing agent; (iii) is added to alkaline soaking agents containing (i) and increases their efficiency. Most efficient washing is achieved by soaking in a bath containing (iii) and a hard-water detergent (*e.g.* Igepon T), followed by boiling in a similar bath. C—**7.**

Cotton and Wool Fabrics: Cleaning; Effectiveness of Detergents. Margaret S. Furry and Verda I. McLendon. *Amer. Dyes. Rept.*, 1950, **39**, 209-212. A cotton cloth and a wool cloth printed or padded on one side with a soiling mixture were used as test fabrics for evaluating the effectiveness of 10 of the soaps and 27 of the synthetic detergents used previously[1] in removing dirt under standard conditions. The change in light reflectance which the detergents produced in the laundering of these fabrics was used as a measure of the soil-removing efficiency. Results are presented and discussed. A comparison of the results obtained previously[1] shows that the order of detergents in removing dirt from the cotton cloth printed with a soiling mixture and from the cotton cloth immersed in it, is much the same. However, the differentiation between the synthetic detergents was greater with the immersed than with the printed soiled fabric. ([1]See *J. Textile Institute*, 1949, **40**, A115.) C—**7.**

Synthetic Detergents: Review. J. W. McCutcheon. *Soap*, 1949, **25**, No. 8, 33-45 (through *Brit. Abstr.*, 1950, B II, 76). The historical development, present trends, and uses in the detergent field of the different types of synthetic detergents are outlined and the first part of an alphabetical table giving the manufacturer, chemical constitution, uses, form, concentration, type, and properties of commercial detergents (227 products, A-E) is given. C—**7.**

Detergent Solutions: Activity. ("Zur Kenntuis des Waschworganges VII/ Über den Zustand von Waschmitteln in wässrigen Lösungen und seine Bedeutung für die Waschwirkung.") Walter Kling. *Textilberichte*, 1949, **30**, 412-419 A review is presented of published investigations on the condition of detergents in aqueous solutions, including micelle formation and solubilisation. The relationship between the nature of the solution and its detergent action is discussed. There are numerous diagrams and 39 references to the literature. C—**7.**

Nylon Fabrics: Care in Laundering and Cleaning. E. I. du Pont de Nemours & Co., Inc. (Nylon Technical Service). *Rayon and Synthetic Textiles*, 1950, **31**, No. 4, 67. Brief suggestions are made for the care of nylon fabrics in washing, drying, ironing, spot cleaning, and storage. C—**7.**

Wool: Chemical Changes Resulting from Wear and Dry Cleaning. E. L. Pfielps, L. O. Lund and H. W. Norton. *Amer. Dyes. Rept.*, 1950, **39**, No. 6, 177-180, 202. The extent of the influence on wool fabric of wear and/or cleaning has been measured in relation to chemical change. The chemical characteristics investigated for three weights of wool serge when new, and after dry cleanings with and without wear, include alkali solubility, and the percentage of nitrogen, sulphur, and ash. Results indicate that (1) in general, alkali solubility increases as dry-cleaning and wear with dry-cleaning continue, the effect of wear being more pronounced, (2) the nitrogen content of the three serges decreases steadily as dry-cleaning and wear increase in inverse ratio to the alkali solubility. The total sulphur results were erratic, and an analysis of all values for ash indicated no differences which could be attributed particularly to dry-cleaning or to wear. W—**7**

PATENT

Laundry Washing Machine. Co-operative Wholesale Society Ltd. and J. R. Moore. B.P.629,259 of 19/6/1946: 15/9/1949. A rotary washing machine is fitted internally with an open-work travelling band driven by two rollers located below the door through which the goods are passed. The band hangs in the machine but is held to a path concentric with the outer shell by means of fin-like studs that run in grooved channels. During the washing operation the band is driven alternately in opposite directions. When discharging the goods, the machine is turned to bring the door lower and after opening the door the band is driven round so as to bring the goods to the opening. The machine thus dispenses with the usual internal cage or drum and obviates the strain on the operative who would have to lean over the open door and reach for the goods. C.

8—BUILDING AND ENGINEERING

(A)—CONSTRUCTION AND MAINTENANCE OF BUILDINGS AND PLANT

Beaunit Mills Rayon Yarn Plant. S. B. Lincoln. *Rayon and Synthetic Textiles*, 1950, **31**, No. 3, 39-46. An illustrated description is presented of the Beaunit Mills' new viscose rayon yarn plant at Coosa Pines, Alabama, U.S.A., including accounts of the materials of construction used, the air-conditioning, exhaust, electrical, and lighting systems, power supply, and waste disposal. C—**8A.**

American Cotton Mill: Lay-out. ("Revised Layout Provides for Future Expansion.") H. W. Roos. *Textile World*, 1950, **100**, No. 4, 103-106, 234, 236. An account is given of the changes made in the lay-out of an American cotton mill in order to keep the amount of movement to a minimum. Lay-out plans before and after alteration are shown. C—**8A.**

Nickel Alloys: Resistance to Corrosion by Sulphuric Acid. *Industrial Chemist*, 1950, **26**, 155-159. Results are given of laboratory and plant corrosion tests on the resistance of Monel and other high-nickel alloys to the corrosive action of sulphuric acid at various concentrations, temperatures, and degrees of aeration. C—**8A.**

Rubber Loom Mounting Blocks. Andre Rubber Co. Ltd. *Textile Manufacturer*, 1950, **76**, 194. Brief details are given of loom mounting blocks made of rubber that do not require fastening to the floor and effectively reduce vibration. C—**8A.**

Stainless Steel Plant: Maintenance. G. L. Snair. *Textile World*, 1950, **100**, No. 4, 128-129, 210, 212, 214. Hints are given on the cleaning and prevention of staining or corrosion of stainless steel. Ten cleansers are listed. C—**8A.**

(C)—Steam Raising and Power Supply

Mill Boiler-house Fuel: Selection. ("Fuel Problem in the Mills.") J. Scott. *Textile Weekly*, 1950, **45**, 1156-1158. A report of an address on the problem of poor coal and its replacement by liquid fuel. A good coal supply should provide about 12,000 heat units per lb., give less than 10 per cent. of ash and cost not more than 60 sh. per ton. If the coal gave less than 9,800 B.T.U. and 15 per cent. or more of ash, and contained more than 5 per cent. of moisture it would pay to burn creosote pitch. Experience with this fuel is briefly reported. C—**8C.**

Fuel Research Station Smoke Eliminators: Performance Tests. ("The Effect of Certain Factors on the Efficiency of a Hand-fired, Natural-draught, Lancashire Boiler.") Department of Scientific and Industrial Research. *Fuel Research, Technical Paper No. 55.*, 1949, pp. 32. A series of boiler trials has been carried out to examine the performance, under a variety of conditions, of the smoke eliminators developed at the Fuel Research Station for hand-fired, natural-draught, Lancashire boilers. With this device smoke can be completely eliminated and heat losses due to incomplete combustion are reduced to negligible proportions. Results of various tests are reported and discussed. C—**8C.**

Textile Mill Electrical Power System. ("Huntsville's New Power System.") *Textile Industries*, 1950, **114**, No. 3, 99-101. A brief illustrated description is given of a new electrical power system installed by the Huntsville Manufacturing Co., Alabama. Electricity is fed to the plant through metal-clad switch gear which has improved safety conditions and elminated overhead power lines. C—**8C.**

Woollen and Worsted Fabrics: High Temperature Hot Water Heating in Processing. L. Walter. *Textile Recorder*, 1950, **67**, No. 804, 76-77. The newer high temperature hot water heating system is compared with steam, and the author considers that each system has its merits. The advantages of each are discussed, and a saving of 10 per cent. in fuel costs by the use of high temperature hot water is possible. Utilisation of hot water at a temperature of over 300° F. has proved to be an economical method for transmitting heat to suitable processing equipment and for room heating. The method of circulation in liquid state through a closed piping system is described. The new system seems particularly suitable for a dyehouse, and a diagrammatic sketch of a dyehouse equipped with a hot water heating system is included. W—**8C.**

(D)—Power Transmission

Jockey Pulley Lubrication Gun. Platt Bros. (Sales) Ltd. *Platt's Bull.*, 1949, **6**, 268-269. A special grease gun is described and illustrated which has been designed for lubricating ball bearing jockey pulleys quickly and with the minimum amount of trouble. C—**8D.**

(E)—Transport

Rubber Wheeled Mill Trucks. ("Thread-clogged truck wheels.") K. G. Bennison. *Textile Weekly*, 1950, **45**, 1092-1094. Illustrations are given of a truck wheel made by Compressed Rubber Products Ltd., which is fitted with circular guard plates at each side of the hub to prevent pieces of yarn from

wrapping round the axle and so clogging the wheel. The plates remain stationary while the wheel revolves. The wheels are fitted to the "Superlite" truck made by an associated firm, Superbuilt Products Ltd. The body of the truck is a tubular steel frame supporting a heavy canvas holder that can be renewed when worn. C—**8E.**

Textile Mill Materials Handling Equipment. S. R. Brookshire. *Rayon and Synthetic Textiles*, 1950, **31**, No. 4, 91-93. The economics and practices of materials handling in textile mills are briefly discussed and a brief description is given of typical applications of mechanical handling equipment to be found in an average textile plant. C—**8E.**

Wool: Transport. ("Wool Handling Improves with Five-story Bale Lift Installation.") *Text. Industries*, 1950, **114**, No. 4, 171-172. The installation and operation of an intermittent bale conveyor at a carpet factory are described. The conveyor can handle fifteen bales per hour. Precautions against the spreading of fire are included. W—**8E.**

(F)—Lighting

Buildings: Lighting and Discomfort Glare. P. Petherbridge and R. G. Hopkinson. *Trans. Illum. Eng. Soc.*, 1950, **15**, 39-79. Work on the glaring effects of bright light sources is described and its application to design problems is considered. Discomfort glare is primarily a function of balance between the brightness and intensity of the glare source on the one hand, and the brightness of the surroundings on the other: the higher the brightness of the surroundings, the less discomfort will be caused by a given glare source. A discussion of the paper is reported. C—**8F.**

(G)—Heating, Ventilation and Humidification

Heat Transfer. W. H. McAdams. *Chem. Eng. Progress*, 1950, **46**, 121-130. Aspects and theories of heat transfer are discussed. The elements of conduction, radiation and convection are considered, followed by more advanced aspects. Heating or cooling without change in phase is discussed, including flow in tubes, laminar flow along a flat plate, local coefficients of heat transfer and heat exchangers. Heat transfer with change in phase is also dealt with, namely boiling of a saturated liquid, boiling of a sub-cooled liquid, and condensation of vapours. Relevant data and graphs are given and some photographs of the boiling of water are shown. There are 101 references to the literature. C—**8G.**

High-frequency Heating: Application to Textiles. ("Die Hochfrequenzheizung.") H. Busath. *Kunstseide u. Zellwolle*, 1949, **27**, 319-323. The principles of high frequency heating are briefly reviewed and the application of dielectric heating to the drying of dyed cotton fabrics, yarn cake drying, and drying of tyre cords is described. Installation and operating costs are discussed and a brief account is given of the use of dielectric heating in Germany. C—**8G.**

Radiant Heat Ovens: Thermal Calculations. ("Infra-red Radiant Heating.") H. J. Garber and F. M. Tiller. *Ind. Eng. Chem.*, 1950, **42**, 456-463. The use of radiation in the heating of materials of low thermal conductivity is discussed and charts for calculating the variation of temperature with time are given. Equations (which will be derived in a future paper) are summarised in the form of Fourier series. Simplified graphical solutions are presented for the temperature *vs.* time at the top, centre and bottom of the slab subjected to radiation. With high radiant intensities, it is possible to heat the surface of a thick material having a low thermal conductivity to a high temperature in a short period of time without greatly elevating the sub-surface temperatures. This is discussed with application to the baking of finishes on the surface of wood. Metal heating is also reviewed. C—**8G.**

Industrial Temperature Measurement and Control Instruments. D. H. Fuller. *Instruments*, 1950, **23**, 246-247, 290, 292-303. A general review is given of temperature measurement and control in industry. The principles of temperature measurement are discussed and some terms are defined. The choice of instruments is considered. Various types of filled thermometers and of electrical instruments and circuits are described. C—**8G.**

Textile Mill Control Instruments: Application. ("Effective Instrument Maintenance.") E. A. Murphy. *Textile Industries*, 1949, **113**, No. 11, 87-91; No. 12, 101-106; 1950, **114**, No. 1, 93-95; No. 3, 129-134. Part I of this series, which is intended to guide mill operation in the use and care of industrial instruments, deals mainly with thermometers. Instrument charts, the effects

and prevention of leaks in the thermal system of the thermometer, and head effect on mercury and vapour actuated systems are discussed. In general, instrument location, protection (from steam, liquids and corrosive vapours), calibration and repair are also dealt with. In part II flow meters are considered. The construction and mode of operation of a typical differential pressure type electric flow meter is described. Aspects dealt with include connecting piping, calibration, maintenance checks, operating errors and suggestions for the avoidance of trouble. Part III is devoted to thermocouple-actuated potentiometer pyrometers. The proper maintenance of the extension wires from the thermocouple to the potentiometer is stressed as is the maintenance of the instrument itself. The importance of regular and correct lubrication of those parts requiring it, both for anti-friction and protection purposes, is discussed. Attention is drawn to the ill-effects of a dust laden atmosphere on the precision parts of the instrument. Part IV deals with electric and pneumatic controllers, maintenance problems in specific textile mill applications such as size storage kettles and air conditioning instruments, the importance of a well planned maintenance programme, and suggestions for organisation to accomplish results. C—**8G.**

"Fielden" Electronic Hygrometer. Fielden (Electronics) Ltd. *Textile Weekly*, 1950, **45**, 1256-1258; *Textile Mercury & Argus*, 1950, **122**, 778-9. Illustrations are given of a direct-reading hygrometer (Type RH 1) and its associated electrode measuring head. The latter is mounted in the space for which a measurement or record of R.H. is required and the former, with its indicating dial, may be at some remote location. The reading over the range 40 to 100 per cent. R.H. is accurate to $\pm$ 1 per cent. C—**8G.**

Unit Air Conditioning Systems: Advantages. R. Sutcliffe (Textile Air Systems Ltd.). *Textile Weekly*, 1950, **45**, 1280-84, 1316-20. A report is given of a lecture on the merits of air conditioning systems of the unit type, with particular reference to automatically controlled units that deliver air through long cloth diffuser tubes traversing the ceiling. A photograph shows the system in a ring room. A discussion is reported. C—**8G.**

Cotton Textile Dust: Determination in Mill Air. Leslie Silverman and F. J. Viles. *Textile Research J.*, 1950, **20**, 109-122. Air-borne dust in cotton textile mills consists of inorganic material, organic trash, cotton, and starch. An account is given of the determination of the total amount of dust in the air by collecting a weighable sample on a pleated paper filter and analysing it gravimetrically. Representative samples of the dust for analysis of the components can be obtained from the filter sample by means of air stripping. The stripping technique is described. Procedures are given for the chemical determination of the components. Grab sampling for specific components is discussed. C—**8G.**

Air Cleaning System. ("A New Approach to Effective Lint Collection.") S. H. Fain. *Textile Industries*, 1950, **114**, No. 3, 106-108. A brief account is given of an air cleaning system installed in an American cotton mill. Air from lint and dust producing processes is exhausted through a dust basement containing units of the Airmat Lint Arrester and thence returns to the workrooms. A fire protection system is incorporated. The "Airmat" is a laminated, porous material made from spruce fibre or bonded glass fibre. The surface is smooth and the deposited lint tends to drop off into the dust chamber. C—**8G.**

PATENTS

Humidifying Apparatus. W. W. Cummings, Jr. B.P.626,351 of 25/7/1947: 26/8/1949 (Conv. 11/1/1940). A unit humidifying apparatus that dispenses with duct systems comprises a chamber having inlet and outlet ports for an air stream, means for heating the indrawing air, a reservoir for water, a gas burner for heating water as it is pumped from the reservoir through a coil to a spray nozzle above the stream of heated air and a solenoid device for controlling the gas burner according to the reactions of a humidistat located in the space to be humidified and a thermostatic switch located within the chamber above the stream of heated and moistened air. The pumps and heater are partitioned off in the chamber and the air flow is guided by appropriate baffle plates. C.

Humidifying Apparatus. Air Control Installations Ltd. (for Akt. Svenska Fläktfabriken). B.P.628,586 of 9/10/1946: 31/8/1949. The invention relates to a unit humidifying apparatus in which air is drawn by a motor-driven fan through a spray of water created by dashing water against a rotating disc. C.

9—SCIENCE

Potato Juice Q-Enzyme: Purification and Crystallization. G. A. Gilbert and A. D. Patrick. *Nature*, 1950, **165**, 573. A method for the preparation of crystalline Q-enzyme makes use of precipitation at low temperature with ethanol from solutions of low ionic strength, followed by crystallization from ammonium sulphate solution. A provisional estimate of the activity of the crystalline enzyme has been made by determining the rate of conversion of amylose to amylopectin. C—**9**.

Magnesium: Absorptiometric Determination. J. G. Hunter. *Analyst*, 1950, **75**, 91-99. A method for the determination of magnesium is based on the formation of coloured complexes of magnesium hydroxide with certain dyes of the Thiazol Yellow class. A constant quantity of dye is used and the excess over that required for forming the complex is separated and determined absorptiometrically in true solution. This procedure can be used for determining magnesium in plant tissues, soil extracts, *etc.* Permissible concentration limits of certain interfering ions and means for controlling their interference are given. Data on the concentrations of Mg, Fe, Ca, Mn and Al in extracts of a number of soils, prepared with (*a*) N-ammonium acetate solution, (*b*) Morgan's solution, and (*c*) 0·5 N acetic acid, are tabulated. C—**9**.

Methyl Methacrylate Polymers and Co-Polymers: Chemical Analysis. J. Haslam and W. Soppet. *Analyst*, 1950, **75**, 63-71. An account is given of methods for the examination of methyl methacrylate polymers and co-polymers. The determination of plasticiser content is described and full details are given of the vacuum depolymerisation of plasticiser-free polymers. Observations are made on the identification of the depolymerisation products with particular reference to polymethyl methacrylate alone and co-polymers containing polystyrene, polycyclohexyl methacrylate, and polyethyl acrylate. The chemical evidence is supported by infra-red data. C—**9**.

Wax "Bloom" on Vulcanised Rubbers: Thickness Estimation. F. Kendall and W. M. Phillips. *Analyst*, 1950, **75**, 74-76. A procedure for estimating the thickness of wax "bloom" on a known area of vulcanised rubbers consists of removing the "bloom" by wiping the surface with de-fatted cotton wool moistened with a solvent and extracting the wax quantitatively from the cotton wool. The thickness of the bloom is calculated from the area of the specimen and the weight and specific gravity of the wax recovered. C—**9**.

Acridine Dyes: Separation by Paper Chromatography. ("Paper Chromatography of Some Acridines.") Michael Lederer. *Nature*, 1950, **165**, 529-530. By development of paper chromatograms either with water or aqueous hydrochloric acid, good separations of pairs of the acridines atebrin, acriflavine and monacrin (5-aminoacridine hydrochloride) were obtained, but in partition chromatography with various solvents no separations were achieved. C—**9**.

Chromatographic Analysis: Physicochemical Principles and Their Utilisation. *Discussions Faraday Soc.*, 1949, No. 7, 11-168. In a General Discussion on Chromatographic Analysis held in September, 1949, the following papers were read: (1) "*The General Theory of Two Solutes Following Non-Linear Isotherms*", by E. Glueckauf, pp. 12-25. (2) "*Chromatography with Several Solutes*", by A. C. Offord and Joseph Weiss, pp. 26-34. (3) "*Theory of Frontal Analysis and Displacement Development*", by Stig Cleasson, pp. 34-38. (4) "*The Conservation Equation of Chromatography*", by W. M. Smit, pp. 38-45. (5) "*Adsorption and Some Constitutional and Steric Properties*", by L. Zechmeister, pp. 54-57. (6) "*Chromatography of Colourless Substances and the Relation between Constitution and Adsorption Affinity*", by H. Brockman, pp. 58-64. (7) "*The Function of Adsorbent Activity in the Chromatographic Separation of Certain Anthraquinone Compounds*", by A. Stewart, pp. 65-79. (8) "*Equilibrium and Rate Studies of Cation-Exchange with Monofunctional Resins*", by D. K. Hale and D. Reichenberg, pp. 79-90. (9) "*The Kinetics of Cation Exchange with a Synthetic Phenolsulphate Resin*", by T. R. E. Kressman and J. A. Kitchener, pp. 90-104. (10) "*Ion Exchange: The Determination of Thermodynamic Equilibrium Constants*", by J. F. Duncan and B. A. J. Lister, pp. 104-114. (11) "*Exchange Equilibria in Anion-Exchange Resins: Porous Exchangers*", by Robert Kunin and R. J. Myers, pp. 114-118. (12) "*Fully Swollen Alginate Gels as Permutites: Kinetics of Calcium-Sodium Ion*

Exchange", by J. L. Mongar and A. Wassermann, pp. 118-123. (13) "*Some Methods for Extending the Scope of Partition Chromatography*", by A. A. Levi, pp. 124-128. (14) "*Partition Chromatography on Paper with Special Reference to Quantitative Separations*", by A. H. Gordon, pp. 128-134. (15) "*Separations Using Zeolitic Materials*", by R. M. Barrer, pp. 135-141. (16) "*Modified Activated Carbon Adsorbents for Continuous Fractional Adsorption*", by D. E. Weiss, pp. 142-151. General discussions of the papers are also reported. C—**9.**

Metal Ions: Chromatographic Separation and Determination on Columns of Cellulose. F. H. Burstall, G. R. Davies and R. A. Wells. *Discussions Faraday Soc.*, 1949, No. 7, 179-183. A process is described for the separation of inorganic radicals on columns of cellulose adsorbent with the aid of organic solvents. The preparation of a suitable pulp and practical details of the process are described. The scope and applicability of the method are illustrated and some of the factors influencing and producing the separations are considered. C—**9.**

Sugars and Their Derivatives: Separation by Partition Chromatography. E. L. Hirst and J. K. N. Jones. *Discussions Faraday Soc.*, 1949, No. 7, 268-274. An account is given of the various applications of chromatography to the separation of mixtures of sugars and sugar derivatives. Methods of partition chromatography on strips of filter paper and on cellulose columns with automatic devices for collecting fractions are described. The uses of special solvents and developing agents are discussed and methods for the quantitative separation and determination of sugars on the micro scale are given. A list of R_a values for various sugars is included and examples are quoted to show the special values of these methods in the investigation of naturally occurring polysaccharides. There are 53 references to the literature. C—**9.**

Proteins: Chromatography; Effect of Salt Concentration and *pH* on the Adsorption to Silica Gel. C. C. Shepard and Arne Tiselius. *Discussions Faraday Soc.*, 1949, No. 7, 275-285. The effects of salt concentration and *pH* on the adsorption of proteins to silica gel have been investigated. Chromatographic separations of proteins have been effected in columns containing silica gel and Supercel to decrease the resistance to flow. Several other substances have also been studied for their ability to adsorb protein. Experimental results are shown graphically. C—**9.**

Amino Acids and Peptides: Chromatography. T. S. G. Jones. *Discussions Faraday Soc.*, 1949, No. 7, 285-296. An account is given of the application to amino acids and polypeptides of the chromatographic methods, adsorption, ion exchange, and partition chromatography by means of paper and columns of silica gel, starch and kieselguhr. Paper chromatography is considered in greatest detail. The mechanism of the method is discussed and many examples of specific applications are given. There are 136 references to the literature. C—**9.**

Bases and Amino Acids: Separation by Displacement Chromatography on Ion-exchange Columns. S. M. Partridge. *Discussions Faraday Soc.*, 1949, No. 7, 296-305. A review is given of work done on the use of displacement chromatography on ion-exchange columns for the separation of organic electrolytes on a preparative scale. In the separation of amino-acid mixtures, columns packed with ion exchange resins may be used. Protein hydrolysates may be fractionated by first removing the aromatic amino acids by adsorption on charcoal and then displacing the remaining mixture from a column packed with a cation-exchange resin by means of a strong base such as ammonia or sodium hydroxide. Experimental data are given. C—**9.**

High Molecular Polymers: Chromatographic Separation. Stig Claesson. *Discussions Faraday Soc.*, 1949, No. 7, 321-325. Difficulties in the chromatographic separation of high molecular substances are discussed. Normally, the rate of adsorption is so low that an extremely low flow-rate is required for equilibrium. Experiments are described on the frontal analysis chromatography of high-molecular polymers. The curves obtained provide information about the composition of high-polymer solutions; in special cases, the agreement with other methods of determining molecular weight distribution is good. C—**9.**

Cellulose: Hydrolysis and Crystallisation. O. A. Battista. *Ind. Eng. Chem.*, 1950, **42**, 502-507. The effect of time on the weight loss and degree of polymerisation of samples of cellulose under both mild and drastic conditions of

hydrolysis has been studied. The samples included purified cotton, bleached cotton linters, wood pulp, ordinary viscose rayon, tyre yarn, Fortisan, Fibre G, and two experimental rayons. For mild hydrolysis 5·0 N hydrochloric acid at 5°, 18° and 40° C. was used, and for drastic conditions 2·5 N and 5·0 N hydrochloric acid at the boil. The use of 2·5 N hydrochloric acid at 105° C. for 15 mins. is recommended as optimum conditions for measuring weight loss or relative crystallinities and levelling-off degrees of polymerisation in conjunction with the apparatus described. Mechanisms are proposed to account for the crystallisation of cellulose chains simultaneously with chain splitting under conditions of mild and drastic hydrolysis, respectively. The effect of crystallisation on hydrolysis is more pronounced for regenerated than for native celluloses. C—**9.**

Proteins: Amino-acid Composition. K. Bailey. *Chemistry & Industry*, 1950, 243-245. From data collected for some 25 proteins histograms have been constructed showing the frequency of occurrence of individual amino acids over small units of grouping. The data are grouped under three headings: the essential amino acids, the dispensable, and those concerned with whole groups of amino acids (*e.g.* anionic and cationic groups, amide group). The usefulness of such information is discussed briefly. C—**9.**

Polymerising Systems: Termination of Biradicals. R. N. Haward. *Trans. Faraday Soc.*, 1950, **46**, 204-210. The possibility of a termination reaction occurring by a reaction between the two ends of a single polymeric biradical is considered. By applying Kuhn's statistical model of a polymeric chain to polystyrene polymerising under certain assumed conditions, it is found that this self-termination process is a relatively probable event, as compared with true bimolecular termination between different polymer molecules. If long-chain biradicals do occur and polymerise, the present picture of the statistical chain in solution may require some amendment. C—**9.**

Vinyl Chloride: Benzoyl Peroxide Catalyzed Polymerisation. ("The Mechanism and Kinetics of the Heterogeneous Polymerization of Vinyl Monomers." I.) W. I. Bengough and R. G. W. Norrish. *Proc. Royal Soc.*, 1950, **200 A**, 301-320. A study has been made of the polymerisation of vinyl chloride, with varied amounts of benzoyl peroxide at temperatures from 33° to 75° C. "Dead" polyvinyl chloride acts as a co-catalyst with benzoyl peroxide in the polymerisation; in the absence of benzoyl peroxide it has no such effect. Polyvinyl chloride exerts its catalytic effect when (*a*) the polymer is present in an undissolved state, and (*b*) benzoyl peroxide or another source of free radicals is also present in the reacting system. An explanation of the co-catalytic effect of the "dead" polymer is suggested. Relative values of the average molecular weight of polymer formed (*a*) at different temperatures, (*b*) at different stages in the reaction, (*c*) with different concentrations of benzoyl peroxide, and (*d*) in the presence of dibutyl phthalate, have been obtained. Results are presented and discussed. C—**9.**

Proteins: Surface Chemistry. C. W. N. Cumper and A. E. Alexander. *Trans. Faraday Soc.*, 1950, **46**, 235-253. I. Spread mono-layers of the proteins, β-globulin, pepsin and insulin, and the synthetic polymers, polymethacrylic acid, nylon, polyalanine and polyphenylalanine, have been studied at a light petroleum/water interface. In addition to the force/area curves an oscillating needle technique was used to measure the interfacial viscosity and elasticity. The effects of *pH*, ionic strength and temperature have been noted. Force/area curves are given and results discussed. II. The adsorption at the oil/water interface of the proteins, β-globulin, pepsin and insulin has been studied as a function of protein concentration, nature of interface, *pH*, ionic strength, temperature and time by means of interfacial tension and interfacial viscosity measurements. By making certain assumptions and using the data of Part I it is possible to calculate the thickness of the surface-denatured protein present at the interface. The nature of the adsorption is discussed. C—**9.**

High-polymer Acid Networks: Reversible Dilation and Contraction. W. Kuhn, B. Hargitay, A. Katchalsky and H. Eisenberg. *Nature*, 1950, **165**, 514-516. Reversible dilation and contraction of high-polymer acid networks has been observed on changing the state of ionisation. Filaments of polyacrylic acid, cross-linked by esterification with polyvalent alcohols and also by divinylbenzene, swell enormously in alkaline solution and contract in acid solution.

The dilation and contraction are reversible and can be repeated by alternate treatment with alkali and acid. The maximal swelling capacity of these systems has been determined as a function both of the degree of cross-linking and the degree of ionization. The results are shown graphically and are briefly discussed. C—9.

Polymers: Molecular Weight; Calculation from Sedimentation and Diffusion Velocities in Non-ideal Solutions. L. Küchler. *Z. Elektrochemie*, 1949, **53**, 219-222 (through *Brit. Abstr.*, 1950, AI, 30). A theoretical discussion of methods of extrapolating the sedimentation and diffusion constants to zero concentration in non-ideal solutions. A method is proposed by which the molecular weight of a polymer may be deduced from measurements of the sedimentation and diffusion constants at one concentration, using an expression containing two empirical constants which do not depend on molecular weight and are constant within a homologous series. C—9.

Polyvinyl Chloride Plasticizer with Liquid Polymers: Creep Behaviour. M. D. Ali, H. F. Mark and R. B. Mesrobian. *Ind. Eng. Chem.*, 1950, **42**, 484-488. The creep of vinyl chloride resin plasticized with liquid polymers derived from common vinyl monomers has been studied. The various chemical factors that influence the formation of liquid vinyl polymers are described. A number of the liquid polymers are compared, by tensile creep, with commercially used plasticizers. C—9.

Metals: Plastic Flow Problems; Application of Relaxation Methods. J. A. Jacobs. *Phil. Mag.*, 1950, [vii] **41**, 349-361. Stress distribution in a two-dimensional slit tension specimen (notched bar under tension) has been investigated by means of a relaxation technique. The theory of the method is discussed, and results and conclusions are summarised and presented graphically. C—9.

Amylopectin and Amylose: Selective Hydrolysis by β-Amylase. R. H. Hopkins and B. K. Jha. *Biochem. J.*, 1950, **46**, 319-324. Various samples of starch have been submitted to hydrolysis by β-amylase and the relative rates of disappearance of amylopectin and amylose have been calculated from the absorption spectra of the iodine compound of their mixture. Results are given and discussed. β-Amylase appears to split maltose from amylopectin about 20 times as rapidly as from amylose. C—9.

***Bacillus Macerans* Amylase: Redistribution Reactions.** ("Studies on the Schardinger Dextrins.") Ethelda Norberg and Dexter French. *J. Amer. Chem. Soc.*, 1950, **72**, 1202-1205. Electrophoretic procedures have been developed for qualitative analysis of mixtures of Schardinger dextrins and mixtures of reducing oligosaccharides. These procedures have been used to follow the course of the action of *B. macerans* amylase on the homogeneous substrates, amyloheptaose and maltose. *Bacillus macerans* amylase effects redistribution reactions among linear amylo-oligosaccharides concurrently with reaction involving the cyclic Schardinger dextrins. (See also *J. Textile Institute*, 1949, **40**, A266.) C—9.

Cellulose: Microbiological Deterioration. Edward Abrams. *Textile Research J.* 1950, **20**, 71-86. The loss of tensile strength of cotton duck has been measured during the first 72 hours of incubation with cellulolytic enzymes. A study of mildewed fibres in dilute alkali showed the localised nature of attack by cellulolytic moulds and the production of alkali-soluble material in the areas concerned. Changes in cellulose films after partial digestion by *Chaetomium globosum* were studied by infra-red absorption. The growth of cellulolytic moulds on modified celluloses and on sugars and the effect of *Chaetomium globosum* on several forms of cellulose were investigated. Experimental data and 31 literature references are given. C—9.

Malt α-Amylase: Iso-electric Point. Eskil Hultin and Ingrid Kristiansson. *Svensk Kem. Tid.*, 1949, **61**, 219 (through *Chem. Abstr.*, 1950, **44**, 1154[b]). The iso-electric point of α-amylase is calculated to be 5·9, from electrophoretic mobility determinations at various *pH* values. This agrees with the minimum solubility reported for *pH* 5·9. C—9.

Sprouting Cotton Plant Proteolytic Enzyme: Isolation. A. V. Blagoveshchenskii and I. I. Chikalo. *C. r. Acad. Sci. U.S.S.R.*, 1949, **68**, 885-888 (through *Chem. Abstr.*, 1950, **44**, 1154[b]). Cotton plant sprouts (4-day) extracted on grinding with 4 per cent. ammonium sulphate and allowed to autolyse for 3

days at 25–30° C. under toluene and filtered, yield a solution of a proteolytic enzyme (test with cottonseed globulin). Fractional precipitation of the solution by ammonium sulphate gives the purest precipitate at 50 per cent. saturation and the product after purification and drying is a grey solid that gives the biuret reaction, but a negative Molisch test, and is soluble in solutions of neutral salts. The enzyme loses activity on storage but is still active after 3 months; it has *pH* activity maxima at 5·8 and 9·2; its activity is low at *pH* 2·2, 6·8, and 7·9. The maximum at *pH* 5·8 indicates that the enzyme belongs to the papain group. If the plants are extracted by 2 per cent. salt and autolysis is done at *pH* 2·2, another enzyme becomes evident with maximum activity at *pH* 2·2; this is accompanied by some gossypain as shown by the cysteine reaction at *pH* 5·8. The third enzyme appears to be stable on storage. C—**9.**

Cellulose Derivatives: Analysis. L. B. Genung. *Anal. Chem.*, 1950, **22**, 401–405. Methods are discussed for the analysis of cellulose esters, cellulose nitrate, and cellulose ethers, including carboxymethylcellulose. The determination of the accuracy of these methods is considered. Experimental data are given. There are 26 references to the literature. C—**9.**

Amino Acids: Chromatographic Adsorption on Organic Exchange Resins. C. S. Cleaver and H. G. Cassidy. *J. Amer. Chem. Soc.*, 1950, **72**, 1147–1152. The counter-current response of a representative organic anion-exchange resin, Amberlite IR-4, towards a typical acidic amino acid (glutamic acid) has been examined. Resins activated with sodium hydroxide, hydrochloric acid and acetic acid have been used and for each system adsorption isotherms are presented and discussed. The influences of type of resin, *pH* of solution and foreign anion contamination upon the response have each been investigated. (See also *J. Textile Institute*, 1945, **36**, A489.) C—**9.**

Amino Acids: Chromatographic Analysis. R. L. M. Synge. *Chemistry & Industry*, 1950, 339–340. A brief account is given of the use of various chromatographic techniques for the analysis of amino-acids under the headings: (*a*) Two-dimensional partition chromatography on paper; (*b*) Partition chromatography on columns of starch, cellulose, *etc.*; (*c*) Chromatography on sulphonated polystyrene resin; (*d*) Ultra-micro isotope-dilution analysis; (*e*) Systematic group separations; and (*f*) End-group assay. C—**9.**

Amino Acids: Separation by Paper Chromatography; Use of Water-miscible Solvents. H. R. Bentley and J. K. Whitehead. *Biochem. J.*, 1950, **46**, 341–345. The use of water-miscible solvents for the separation of amino acids by paper chromatography is described. Aqueous mixtures of relatively non-volatile solvents such as furfuryl alcohol and tetrahydrofurfuryl alcohol give small sharp spots by downward flow in the usual way. With more volatile solvents (lower alcohols, acetone, pyridine) satisfactory results can be obtained by the method of capillary ascent in small closed glass tanks. C—**9.**

Basic Amino Acids: Separation. ("Displacement Chromatography on Synthetic Ion-Exchange Resins.") S. M. Partridge, R. C. Brimley and K. W. Pepper. *Biochem. J.*, 1950, **46**, 334–340. The use of sulphonated cross-linked polystyrene cation-exchange resin for the separation of basic amino acids has overcome difficulties encountered with sulphonated phenolformaldehyde resin used in previous work.[1] Three samples of polystyrene resin were prepared (details are given), and a commercial sample was also used, all having different degrees of cross-linking. During the separations shrinkage of the exchange columns occurred, but a procedure was evolved whereby this disturbance was minimized. Mixtures of leucine, histidine, lysine and arginine were separated successfully by this method. The efficiency of the resin is influenced by the degree of cross-linking. Separations with the commercial resin sample were not successful. (*J. Textile Institute*, 1949, **40**, A531.) C—**9.**

Proteins: Chromatography. J. I. M. Jones and S. E. Michael. *Nature*, 1950, **165**, 685. A simple method for the location of proteins on a paper chromatogram or a cellulose column utilises the fact that acid dyes have an affinity for protein fibres but not for cellulose. The developed chromatogram is treated with an acid solution of a suitable dye and rinsed in water, when the proteins appear as coloured spots or streaks on a white background. Amino-aids and peptides are not stained. C—**9.**

Organic Functional Groups: Determination by Chemical Analysis. Sidney Siggia. *Anal. Chem.*, 1950, **22**, 378-381. The technique involved in devising new methods of chemical analysis for organic functional groups is discussed. examples are given of reactions which can be used for functional group determination. Techniques are described for minimising difficulties such as equilibrium, incomplete reaction, poor end point, and interferences. C—**9.**

Organic Functional Groups: Determination by Molecular Spectroscopy. N. D. Coggeshall. *Anal. Chem.*, 1950, **22**, 381-395. The analysis of organic compounds by molecular spectroscopy is discussed. An account is given of the applicability, scope, and limitations of infra-red and Raman spectroscopy, ultra-violet absorption spectroscopy, micro-wave spectroscopy, and mass spectroscopy. Experimental data are given. There are 64 references to the literature. C—**9.**

Cellulose: Oxidation by Nitrogen Oxides. Domenico Borruso. *Ind. Carta*, 1949, **3**, 87-92 (through *Chem. Abstr.*, 1950, **44**, 1696[b]). A review is given of the various cellulose oxidation reactions, with particular reference to the reactions with nitrogen oxides. The characters of the various oxidised products are described. C—**9.**

Cellulose: Solubility in Cuprammonium Solutions; Effect of Ammonia. M. I. Arkhipov and V. P. Kharitonova. *J. Applied Chem., U.S.S.R.*, 1949, **22**, 1030-1036 (through *Chem. Abstr.*, 1950, **44**, 2233[d]). The maximum amount of copper absorbed by cellulose per mole $C_6H_{10}O_5$ from cuprammonium solutions at constant Cu content, varies strongly with the concentration of ammonia. In solutions incapable of dissolving cellulose, absorption of Cu first decreases with increasing NH_3 content, passes through a minimum, and then increases with a further increase in NH_3; with increasing Cu content the minimum shifts to increasingly high NH_3 concentrations. Cellulose can be saturated with Cu towards a solution of given Cu and NH_3 content. However, fresh cellulose immersed in a solution whose Cu content has been decreased by reaction with cellulose does take up Cu. In solutions rich in Cu the solubility of cellulose increases very strongly with increase in NH_3 concentration. The threshold NH_3 content at which rapid solution begins is lower the higher the Cu content. The lowering of solubility through decrease of Cu content can be compensated by a corresponding increase in the NH_3 content. Solution of cellulose takes place in 2 steps, absorption of Cu and solvation of the Cu-cellulose complex formed. It is shown that NH_3 is an effective solvating agent for the Cu-cellulose complex. C—**9.**

Cuprammonium Solvent and Cellulose Solutions: Preparation. H. F. Launer and W. K. Wilson. *Anal. Chem.*, 1950, **22**, 455-458. A modified procedure is described for preparing the cuprammonium fluidity reagent by dissolving solid cupric hydroxide in ammonium hydroxide and for protecting the cellulose from oxidation by the addition of metallic copper or cuprous chloride. This method saves time without a loss of precision. Experimental data and 39 literature references are given. C—**9.**

Fibrous Cellulose: Hydrolytic Degradation. Th. Kleinert and V. Mossmer. *Monatshefte für Chemie*, 1948, **79**, 442-443 (through *Chem. Abstr.*, 1950, **44**, 1695[d]). Two experiments are described in which a raw cotton cellulose was treated with 0·1N HCl for 360 days at 20° C. in the dark. In one case small amounts of surface-active agent (Igepon) were also added. The degree of polymerisation was determined at intervals from viscosity measurements. Results indicated that a portion of the amorphous cellulose lies in the region of high D.P. As hydrolysis proceeds, dry and wet strength both decrease but, in the latter part of the experiment, the decrease in wet strength diminishes, and at the termination of the hydrolysis dry and wet strengths are nearly identical. Dry elongation was only slightly changed by progressive hydrolysis, whereas wet elongation showed a marked increase. C—**9.**

Nitro-acetylcellulose: Production. S. N. Danilov, M. A. Sokolovskii and A. J. Evdokimova. *J. Gen. Chem., U.S.S.R.*, 1947, **17**, 1888-1893 (through *Chem. Abstr.*, 1950, **44**, 1036[e]). Nitrocellulose was treated with glacial acetic acid (5 parts) and sulphuric acid (0·15); during 120 hours at 20° C. the nitrogen content fell from 11·62 to 8·63 per cent., and the acetyl content rose to 7·94 per cent. During 96 hours at 30° C. the N content fell from 11·62 to 1·92 per cent. and the acetyl content rose to 43·03 per cent. On a molar basis the entering acetyl

groups just balance the displaced NO_3 groups. The solubilities of intermediate nitro-acetylcelluloses in various organic solvents are given qualitatively. C—**9**.

Amylopectin: Acid Degradation to Isomaltose. M. L. Wolfrom, J. I. Tyree, T. T. Galkowski and A. N. O'Neill. *J. Amer. Chem. Soc.*, 1950, **72**, 1427-1428. The isolation of isomaltose, as its crystalline β-D-octa-acetate, from the acid hydrolysate of amylopectin is reported. Amylopectin in waxy maize starch was hydrolysed with hydrochloric acid, the product was acetylated and the octa-acetate separated by chromatography. C—**9**.

Polysaccharides: Structure. A. A. Strepikheev. *C. r. Acad. Sci. U.S.S.R.*, 1949, **67**, 471-474 (through *Chem. Abstr.*, 1950, **44**, 1424[h]). Polysaccharides such as cellulose are regarded not only as linear macromolecules of glucopyranose units, but also as containing open-chain units. Dehydrations and other reactions may occur either intra- or intermolecularly, leading to tridimensional structures. The formation of these structures *in vivo* probably proceeds by polymerisation of furanose sugar units, giving 1 : 4-glucoside links in the chain, yielding "proto-carbohydrates" which then undergo inter- and intra-molecular dehydrations to yield the final products, all being conditioned by the lability order of the three possible acetal links at the carbonyl carbon atom, namely: hemiacetal, cyclic glucoside, and open-chain diglucoside. C—**9**.

Schardinger Dextrins: Constitution. (1) Karl Freudenberg and Fritz Cramer; (2) Werner Borchert. *Z. Naturforschung*, 1948, **3b**, 464; 464-465 (through *Chem. Abstr.*, 1950, **44**, 1036[e]). (1) The fusion-point depressions of the methyl ethers of α-dextrin and β-dextrin in cyclohexanol were determined at various concentrations and the curves extrapolated to infinite dilution, yielding the formulæ $(C_6H_{10}O_5)_6$ for α-dextrin and $(C_6H_{10}O_5)_7$ for β-dextrin. It is suggested that α-dextrin is cyclohexaglucane (α-1 : 4), β-dextrin is cycloheptaglucane (α-1 : 4), and the α-dextrin is cyclo-octaglucane (α-1 : 4). (2) The molecular weights of α-, β-, and α-dextrin, determined by X-ray analysis, were the same as those obtained by Freudenberg and Cramer (above). X-ray data for the three dextrins are given. C—**9**.

Starch: Nitration; Mechanism. Shalom Israelashvili. *Nature*, 1950, **165**, 686. Observations on the nitration of maize and potato starch with a mixture of nitric and sulphuric acids suggest that in this reaction the active agent is not pseudo-nitric acid, but rather a strongly electrophilic molecular species, probably the positive nitronium ion (NO_2^+). C—**9**.

Silk Fibroin: Control of Purification. S. N. Baketovsky. *J. Appl. Chem. U.S.S.R.*, 1949, **22**, 179 (through *Brit. Abstr.*, 1950, B II, 172). Since cystine is present in sericin but not in fibroin, only the sericin gives a positive S reaction. The usual qualitative test for organic S (production of PbS) can therefore be used as a control in purifying fibroin from sericin. C—**9**.

Congo Red: Crystallisation. Peter Mitchell. *Nature*, 1950, **165**, 772-773. The potassium salt of Congo Red has been obtained in crystalline form by salting out from aqueous solution (at 95° C.) with potassium acetate solution. A micrograph of the crystals is shown. C—**9**.

Metallic Soaps: Function in Drying Oil Film Formation. R. F. Bowles. *J. Oil & Colour Chemists' Assoc.*, 1950, **33**, 97-113. The rôle of metallic soaps as minor constituents of drying oil and resin films has been investigated. Data are presented on the effects of thirteen, "pure" naphthenates on evaporation, flocculation, and gelation of certain specified films. Variable interfacial action at the oil/air, oil/polymer, and oil/pigment interfaces is demonstrated. There is evidence that Zn, Pb and Ca assist film formation by promoting flocculation, and that the use of soaps of these metals as "driers" is for this purpose. C—**9**.

Linseed Oil: Oxidation by Film Formation. ("Film Formation in the Linoleum Industry.") F. T. Walker. *J. Oil & Colour Chemists' Assoc.*, 1950, **33**, 83-96. A description is given of the scrim process of film formation in the oxidation of linseed oil for linoleum. The chemistry of the process is discussed and the analysis of the products is described. A discussion of the paper is reported. C—**9**.

Acrylonitrile and Methyl Methacrylate; Polymerisation; Initiation by Radicals. ("Zur Kenntnis des 'dreiwertigen' Kohlenstoffs: Einige Versuche über Polymerisations-Erregung durch Radikale.") K. Ziegler, W. Deparade and Helga Kühlhorn. *Liebig's Ann. Chemie*, 1950, **567**, 151-179. A

detailed account is given of experiments carried out on acrylonitrile and methyl methacrylate in order to study the initiation of polymerisation by radicals and labelled initiators. C—9.

Liquid Vinyl Acetate: Polymerisation; Behaviour of Inhibitors and Retarders. P. D. Bartlett and Harold Kwart. *J. Amer. Chem. Soc.*, 1950, **72**, 1051-1059. The behaviour of certain inhibitors or retarders of the peroxide-induced polymerisation of liquid vinyl acetate at 45° C. has been studied kinetically by the dilatometric method. The compounds used were 2:2-diphenyl-1-picrylhydrazyl, duroquinone, dinitro-durene, nitrobenzene, *p*-nitrotoluene, iodine, and *o*-, *m*- and *p*-dinitrobenzene. Results are presented and discussed in each case. C—9.

Liquid Vinyl Chloride: Polymerisation; Absolute Rate Constants. Harold Kwart, H. S. Broadbent and P. D. Bartlett. *J. Amer. Chem. Soc.*, 1950, **72**, 1060-1066. An improved apparatus is described for determining absolute rate constants of liquid bulk polymerisation. The principle of the method is dilatometric, and a rotating sector is used to control the amount of light falling on the reaction mixture. The results of a redetermination of the absolute rate constants for the steps in the polymerisation of liquid vinyl acetate are reported and compared with those of other workers. C—9.

Vinyl Compounds: Polymerisation by the System Diacyl Peroxide-Tertiary Amine. ("Über die Polymerisation von Vinylverbindungen durch das System: Diacylperoxyd-tertiäres Amin.") Leopold Horner and Ernst Schwenk. *Liebig's Ann. Chemie*, 1950, **566**, 69-84. Investigations have been carried out on vinyl compounds which support the view that the increase in rate of polymerisation by peroxide and tertiary amines is in fact a redox-catalysis. Contrary to primary and secondary amines, tertiary amines act as electron donors and thus pass into aminium radical salts which, after further modifications, together with the peracyl radical can be made responsible for all further reactions. Primary and secondary amines generally act as inhibitors. Experimental details are given. C—9.

Plasticisers: Characteristics and Properties. *Industrial Chemist*, 1950, **26**, 152-154. The essential characteristics of a good plasticiser are enumerated and an account is given of the properties of a variety of compounds suitable for specific types of plasticisation, including di-alkyl azelates, adipates and phthalates, esters of citric, aconitic, lactic and levulinic acids, and tri-aryl phosphates. C—9.

Liquid Films: Rupture by Antifoaming Agents. ("Inhibition of Foaming.") Sidney Ross. *J. Phys. Colloid Chem.*, 1950, **54**, 429-436. The destruction of liquid films by antifoaming agents is discussed. Concepts of other workers ("entering coefficient" and "spreading coefficients") are combined to provide a mechanical description of some of the observed phenomena. C—9.

Monomolecular Layers: Viscous Flow. ("Quelques propriétés de l'énergie d'activation d'écoulement visqueux des couches monomoléculaires et leur interprétation structurale.") Maurice Joly. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 35-43; III, 24. (Publ. 1949.) Expressions derived by Eyring *et al.* (1937, 1938) permit the calculation of the activation energy of viscous flow of monomolecular layers from measured values of the coefficient of superficial viscosity and molecular area. The experimental values of activation energy of flow plotted as a function of molecular area can be represented by broken lines, such breaks showing the beginning or end of a molecular transition. At these critical points the layer consists of a single type of molecule; between them, it consists of a mixture of two molecular "shapes". Although a molecule has no permanent shape, it has nevertheless a sort of "mean shape" representing the statistical mean of possible configurations for each molecule for a given set of conditions. These "mean shapes" may be calculated from the experimental data and are illustrated for a number of aliphatic compounds. A brief discussion is reported. C—9.

Proteins: Reversible Electrophoretic Boundary Spreading. R. A. Brown and J. R. Cann. *J. Phys. & Colloid Chem.*, 1950, **54**, 364-369. A general theory of the reversible electrophoretic boundary spreading of non-homogeneous proteins has been developed and applied to the interpretation of the results of spreading experiments performed with proteins possessing both Gaussian and non-Gaussian mobility distributions. C—9.

Dodecylsulphate Coacervate: Action of Fatty Acids and Alcohols. ("Influence of Organic Compounds on Soaps- and Phosphatide-Coacervates." XI.) H. L. Booij and D. Vreugdenhill. *Proc. Kon. Ned. Akad. Wet.*, 1950, **53**, 299-304. The action of a series of fatty acids and normal primary alcohols on coacervates of dodecyl sulphate has been studied. At relatively low *pH* many fatty acids act as condensing agents. A maximal condensing activity on dodecylsulphate occurs with myristic acid (C_{14}), in agreement with a given hypothesis. The influence of fatty acids on cetyl sulphate coacervate is also in accordance with theory. The normal alcohols exert a stronger condensing action, the maximal activity lying at C_{12} (or C_{13}?) alcohol (with dodecyl sulphate). (For Part X see *J. Textile Institute*, 1950, **41**, A228.) C—**9.**

Elastic Viscous Oleate Systems Containing Potassium Chloride: Properties. H. G. Bungenberg de Jong and H. J. van den Berg. *Proc. Kon. Ned. Akad. Wet.*, 1950, **53**, 233-246. The authors discuss the effect of organic compounds[1] on the curves[2] connecting G with λ, $1/\lambda$ and n at KCl concentrations less than, equal to, and greater than the concentration for minimum damping of the blank. The scheme is illustrated for *n*-hexyl alcohol and for ethanol acting at various KCl concentrations. Results obtained in Part VI[3] with the homologous series of fatty acid anions C_6-C_{14} are discussed with the aid of the above curves. The effects of added C_{14} (myristate) on the elastic properties of the oleate system are discussed in particular. Results previously obtained with the homologous series of the alcohols (C_1-C_4) and of the fatty anions (C_6-C_{12}) are compared. ([1]*J. Textile Institute*, 1950, **41**, A228; [2]A325; [3]1949, **40**, A417.) C—**9.**

Randomly-coiled Long-chain Molecules: Hydro-dynamic Properties. Hans Kuhn. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 44-57; III, 25-27. (Publ. 1949.) The degree of immobilisation of solvent inside the "statistical coil" of a long chain molecule has been investigated by means of macroscopic models. The method of calculating the exterior dimensions of a randomly coiled molecule is outlined. On the basis of these dimensions large-scale wire models have been made. The frictional force produced by the translational movement of such coils through a viscous liquid has been studied and a relation connecting the translational resistance with the viscosity of liquid, the velocity and parameter that characterise the shape of the coil, has been obtained. From the equation expressions for the sedimentation constant and the diffusion constant can be derived from which by the introduction of experimental values, the length and diameter of a statistical element in the chain can be computed. Figures obtained for cellulose acetate in acetone show satisfactory agreement between the "hydrodynamic" and "true" thickness of an element as derived from molecular structure data. The translational resistance of a random coil is compared with that of an equally large sphere. Two theoretical intrinsic viscosity/degree of polymerisation curves for cellulose acetate are plotted and are in fairly good agreement with experimental measurements. A discussion of the paper is reported. C—**9.**

Polystyrene: Degradation in Solution. ("Sedimentation Equilibria of Polydisperse Non-ideal Solutes.") J. O. Thompson. *J. Phys. & Colloid Chem.*, 1950, **54**, 338-353. The degradation of polystyrene in solution under a variety of conditions has been studied by viscometry, osmometry, and sedimentation equilibrium. The presence of oxygen or benzoyl peroxide is necessary for degradation; under these conditions the extent of degradation depends on the concentration of polymer and peroxide (or oxygen), and the nature of the solvent. Temperature has little effect. Studies made on the degradation products support a simple oxidative mechanism for the degradation rather than a chain mechanism. Relevant data are given. C—**9.**

Permselective Protamine Collodion Membranes: Electrochemistry. Karl Sollner and H. P. Gregor. *J. Phys. & Colloid Chem.*, 1950, **54**, 325-330; 330-338. (I) A study has been made of the rates at which final, stable concentration potentials are established with three electrolytes (KCl, KIO_3 and $MgCl_2$) across three types of permselective protamine collodion membranes, carefully freed from the anions of the electrolytes in the external solutions. The rates depend on the nature of the membrane, the nature of the elctrolyte, and the absolute concentrations of the adjacent solutions. Rate curves are shown and discussed. (II) Concentration potentials of KCl, KIO_3, LiCl and $MgCl_2$ solutions across several types of permselective protamine collodion membranes have been

measured at several concentration levels between 0·001N and 0·4N, the concentration ratio being 2:1. Experimentally obtained concentration potentials are compared with the calculated values of the concentration potentials which would arise with membranes of ideal ionic selectivity. (See also *J. Textile Institute*, 1946, 37, A254, A337.) C—**9.**

Melamine Resin: Analysis of Dilute Solutions. ("Studies on Chemicals Imparting Wet Strength.") Bertil Ivarsson and Börje Steenberg. *Svenska Träforskningsinst.*, 1946, No. 8, pp. 6. (Reprint from *Svensk Papperstidning*, 1945, 4, 1-6.) The use of melamine resins for the improvement of the wet strength of paper is briefly discussed. The properties of polymerised trimethylol-melamine are described, particularly solutions and their stability with age. Studies on the turbidity of these colloidal resin solutions, have been carried out with the Pulfrich nephelometer, and results and conclusions are presented. Factors on which the turbidity depends are given. A procedure for routine analysis is outlined. C—**9.**

Suspensions: Rheology. A. de Waele and E. W. J. Mardles. *Proc. 1st Internti. Congress Rheology*, 1948, II, 166-172; III, 56-58. (Publ. 1949.) A concise account is given of the factors which influence the rheological characteristics of suspensions. Investigations have been carried out on the influence of interfacial forces, especially friction, on the sedimentation volume of suspensions. Results and conclusions are summarised. A discussion is reported. C—**9.**

Collagen: Swelling in Alkaline Solutions. Joane H. Bowes and R. H. Kenten. *Biochem. J.*, 1950, **46**, 1-8. The swelling of collagen in sodium hydroxide solution has been studied, including the effects of *pH* and additions of sodium chloride. Swelling curves are given and results discussed. Swelling increases progressively with increase in *pH* and small amounts of salt depress the swelling at *pH* values up to 12·5. C—**9.**

Gels: Swelling; Physical Problems. ("Some Aspects of Swelling.") J. J. Hermans. *Proc. 1st Internti. Congress Rheology*, 1948, II, 179-196; III, 58-59. (Publ. 1949.) The thermodynamics of gels subject to stresses are discussed. Thermodynamic relations in this field are greatly simplified if expressed in terms of forces and displacement instead of stresses and strains. The problem of accounting for the fact that the orientation of the structural elements in a gel is a function of its co-ordinates is dealt with. It is assumed that the gel, although anisotropic as far as its swelling tendency is concerned, is isotropic in its response to small stresses. It can be shown that under certain conditions the average orientation is not changed in the process of swelling or de-swelling. A brief discussion is reported. C—**9.**

Cellulose Acetate: Molecular Structure as Determined Viscometrically and by Surface Spreading. ("Structures moléculaires de l'acétate de cellulose étudiées par viscométrie et par étalements superficiels." P. Clément and J. Pouradier. *J. Chimie Phys.*, 1949, **46**, 620-626. The influence of the medium of dispersion on changes in the dimensions of cellulose acetate molecules has been investigated by measurements of the specific viscosities of dilute solutions and by evaluation of the minimum surface spreading of these molecules when a surface film of the polymer is compressed isothermically. Specific and intrinsic viscosities vary little with composition of solvent. A decrease is observed, however, in mixtures of slight dispersive power for which the polymer is in a state near to coacervation or precipitation. In these conditions the hypothesis of the tendency to coil of macromolecules seems justified. Results of surface spreading measurements are in agreement with the possibility of complete extension of the cellulose acetate chain after evaporation of the solvent, the glucose rings themselves being disposed parallel to the surface of the substrate. There are 38 references to the literature. C—**9.**

Pectins: Gel Strength and Vicosity. ("Pectin Studies." IV.) L. H. Lampitt, R. W. Money and B. E. Judge. *J. Soc. Chem. Ind.*, 1950, **69**, 53-55. Gel strength and viscosity studies have been carried out with a series of pectins obtained by grinding citrus pectin for various times in a ball mill. As degradation increased, the quantity of material estimated as calcium pectate, but not contributing to gel formation, increased, and the slope of the straight line representing the gel strength and square of the concentration relationship became less. This slope bears a linear relationship to the limiting viscosity values for the

pectin in an aqueous solution and the nitro-ester in acetone solution, and is proportional to the Young's modulus of the fibrils constituting the gel. C—**9.**

Liquids: Kinetic Theory of Elasticity and Viscosity. H. S. Green. *Proc. 1st Interntl. Congress Rheology*, 1948, I, 12-28; III, 3-6. (Publ. 1949.) A theory is developed in which elastic and viscous properties of fluids are related to the statistical configuration and motion of the constituent molecules. The stresses in a liquid are expressed in terms of the mutual potential energy of a pair of molecules, a radial distribution function defining molecular distances and the temperature explicitly. Expressions for the rigidity modulus and viscosity coefficient are deduced by considering the distortion of the molecular configuration due to the macroscopic deformation or motion of the fluid. An integral equation which it is necessary to solve in order to find the viscosity is derived. A discussion of the paper is reported. C—**9.**

Dilute Macromolecular Solutions: Viscosity. ("Viscosité des solutions macromoléculaires étendues.") Charles Sadron. *Proc. 1st Interntl. Congress Rheology*, 1948, I, 62-94; III, 12-14. (Publ. 1949.) The macromolecular region lies between that of molecules and of large suspended particles. The effect of size, size-distribution, shape and concentration of macroscopic particles on viscosity of solutions is discussed, especially following the work of Einstein, Burgers, and Simha. Experimental verifications are sought from work on plant viruses. The intrinsic viscosity of solutions of molecular chains is considered, particularly in relation to degree of polymerisation. A discussion of the paper is reported. C—**9.**

Rheology: Psychophysical Aspects. G. W. Scott Blair. *Proc. 1st Interntl. Congress Rheology*, 1948, I, 95-110; III, 14-15. (Publ. 1949.) A large group of materials are subject to "disintegrational uncertainty", *i.e.* these systems are changed by the process of testing and measurements of their rheological behaviour. Conditions under which this uncertainty can be circumvented are briefly considered. The combinations of properties which are observed subjectively may be more easily described in symbols if the operation of fractional differentiation with respect to time is introduced; *e.g.* applied to strain when the strain and ordinary rate of strain do not suffice to describe what is observed in a simple way. Such a concept has already been found convenient in generalising Nutting's equation for purely objective observations. In both fields (psychophysics and physics) it is found that physical behaviour must often be characterised by a group of several magnitudes (the members of which are insignificant except in combination) in order that materials which differ widely in behaviour may be compared. A brief discussion of the paper is reported. C—**9.**

Rheology in Industry. R. Houwink. *Proc. 1st Interntl. Congress Rheology*, 1948, I, 111-128; III, 16-18. (Publ. 1949.) The industrial importance of rheology and the main rheological properties important for industry are discussed. Viscosity in technical systems not possessing a yield value is considered for (i) glass, (ii) asphaltic-bitumen, (iii) thermoplastics with globular and with chain molecules, and (iv) setting (hardening) materials. Finally, technical systems having a yield value are examined and the thixotropy of paints is considered in relation to quality. A brief discussion is reported. C—**9.**

Thixotropic and Plastic Flow: Mechanism. Sir Charles Goodeve. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 5-11; III, 18-20. (Publ. 1949.) The theoretical treatment of non-Newtonian or thixotropic flow may start from one of two approaches. In the *solido* approach the stress applied to one plane generates a strain followed by a repetitive "relaxation" of the links which transmit the force from one plane to the other; thus there is a series of jumps resulting in creep. In the *fluido* approach, the flow generates a viscous resisting force, usually explained on the basis of transfer of momentum from one plane to the other. Both give a reasonable dynamic picture of Newtonian behaviour. In the simpler examples of thixotropy there is also a component of the force independent of shear rate; $F = \eta_0\sigma + \theta$, where F is shearing force per unit area, σ is rate of shear and η_0 and θ are constants. This equation applies only to the steady state. In all known systems showing appreciable thixotropy the material is not molecularly homogeneous, and the thixotropic contribution rises rapidly with the concentration of suspended or dissolved phase. These facts are explained by the impulse theory[1] which assumes links, capable of withstanding forces up to a critical value, which transmit impulses from the moving to the reference plane before breaking. This theory is developed and illustrated by a mechanical

model. The "coefficient of thixotropy", θ, though dimensionally the same as the yield point, is nevertheless distinct and corresponds to different rheological conditions. The theory can be extended to cover hysteresis phenomena. What little evidence on temperature coefficients of viscosity and thixotropy exists is in agreement with the theory. A brief discussion of the paper is reported. ([1]See *J. Textile Institute*, 1939, **30**, A353.) C—**9.**

Liquid Dispersions and Solutions: Viscosity and Dielectric Constant. Andries Voet. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 15-22; III, 21-22. (Publ. 1949.) Measurements of the dielectric constant of dispersions afford an excellent method for the determination of structural changes in liquid systems subjected to different shearing stresses and is limited only by the accuracy of measurement possible in media of high conductivity. This and the rheological method have been applied to dispersions with varied agglomeration factors and to polymer solutions. It is shown that in polymer solutions, as in dispersions, the polymer particles move independently at lower concentrations. Above a critical concentration the particles no longer move independently, though shearing stresses can break up most of the agglomerates. The higher the molecular weight of the polymer, the lower the critical concentration, and the more pronounced the particle interaction. A brief discussion of the paper is reported. C—**9.**

Liquids: Viscosity Anomaly Causing Spinning; Stress/Flow Curves of Liquid Threads. H. Nitschmann. *Proc. 1st Interntl. Congress Rheology*, 1948, II 32-34; III, 23. (Publ. 1949.) The spinning properties of certain fluids are related to a viscosity anomaly that consists of an increase of the flow resistance with increasing rate of stress. This anomalous behaviour does not occur in the usual viscometers. A "spin balance" is briefly described which allows a liquid thread to be pulled from a capillary outlet at variable speed and the simultaneous measurement of the stress applied to the thread. Trouton's formula is used to evaluate the measurements which are given for a solution of nitrocellulose in a high-boiling solvent and chlorinated diphenyl (no solvent). These show the expected anomaly and the viscosity curves obtained by this method and by the use of a capillary viscometer are distinctly different. A brief discussion is reported. C—**9.**

Fluids: Flow through Macromolecules in Solution. ("Problems of Fluid Flow through Swarms of Particles and through Macromolecules in Solution.") H. C. Brinkman. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 58-67; III, 27-28. (Publ. 1949.) In order to describe the flow of fluids through swarms of particles it has been proposed to extend the equation of hydrodynamics with a damping term proportional to the mean rate of flow. A survey is given of various problems referring to the hydrodynamic properties of swarms of particles and of macromolecules which can be treated by this method. A brief discussion of the paper is reported. C—**9.**

Dilute Solutions of Large Molecules: Effect of Shape and Interaction on Viscosity. Robert Simha. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 68-76; III, 29-30. (Publ. 1949.) The first part of the paper summarises the theory of intrinsic viscosity of rod-like molecules for vanishing shear rate as developed some years ago, and its application to the determination of the molecular size of protein molecules. For this purpose viscosity results are compared with data obtained on the respective systems by sedimentation diffusion, electron microscopy, X-ray diffraction and Rayleigh-scattering. The last part of the paper deals with a theory of interaction effects in streaming solutions. A brief discussion of the paper is reported. C—**9.**

Liquids: Rotational Viscosity. ("Les viscosités de rotation dans un liquide.") P. Girard and P. Abadie. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 83-94; III, 34-36. (Publ. 1949.) The experimental study of the dielectric relaxation of liquid media leads to the conclusion that the viscosity concerned in the rotation of molecules is not the same as the familiar, macroscopic viscosity except for very large, almost spherical molecules. For molecules of smaller volume the viscosity involved in their rotation is entirely different (microscopic viscosity). With molecules having the shape of an ellipsoid of revolution, two microscopic viscosities of rotation are distinguished, one corresponding to the oscillations of the ellipsoid about its axis, the other to oscillations of the axis itself. C—**9.**

Polymers: Viscosity of Concentrated Solutions. H. de Bruijn. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 95-100; III, 36-37. (Publ. 1949.) The

different interaction phenomena which may influence the viscous behaviour of polymer solutions, if these solutions are perfectly stable in a colloid chemical sense, are discussed. An attempt is made to derive an expression for the viscosity of polymer solutions as a function of the concentration. After comparison with experimental data, the expression is transformed into a relation between intrinsic and actual viscosity of polymer solutions. In the discussion of the paper the author concedes that his picture of the effect of concentration on the viscosity of polymer solutions is not correct, but points out that this does not affect the practical importance of the viscosity relation derived. C—**9.**

Extrusion Type Plastometer for Thermoplastics. E. B. Atkinson and H. A. Nancarrow. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 103-107; III, 37-38. (Publ. 1949.) An illustrated description is given of an extrusion type plastometer developed for the study of the extrusion of thermoplastics. A few results are given and a discussion of the paper is reported. C—**9.**

Absolute Co-axial Cylinder Viscometer for Measuring the Visco-elastic Properties of Concentrated High Polymer Solutions. G. Stainsby and A. G. Ward. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 108-113; III, 39-40. (Publ. 1949.) An absolute concentric cylinder viscometer for studying the visco-elastic behaviour of concentrated high polymer solutions is described and illustrated. It can be operated at either constant rate of shear or constant shearing stress and can be adapted for the measurement of stress relaxation. An air thermostat capable of controlling the temperature of the instrument to 0·1° C. in the range −20° to +100° C. is briefly described. The range of viscosity covered is from 10 to 10^5 poise, with an accuracy of 1-2 per cent. A brief discussion is reported. C—**9.**

Aeroviscometer. M. Louis. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 119-121; III, 42. (Publ. 1949.) (In French.) A simple viscometer for industrial use in obtaining rapid and reliable results when the more usual laboratory apparatus is not available, consists essentially of a glass bulb to the lower end of which a capillary tube is attached. In use the capillary is thrust into the liquid and the time taken for the apparatus to sink a known distance (as shown by two marks on the upper stem) is recorded. From the time and constant for the apparatus the viscosity of the liquid is calculated by means of a given relation. The constant for the instrument (which is different for different classes of fluids) is determined by means of calibration with a fluid of known viscosity. C—**9.**

Polymer Solutions: Flow Properties. C. N. Davies. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 152-159; III, 52-54. (Publ. 1949.) The behaviour of Newtonian liquids when falling from a tube is discussed. Newtonian liquids of low viscosity form a main drop and a string of satellite droplets when ejected from a fine nozzle, but those of high viscosity form a drop on a long thread which then breaks up. With high polymers, threads are usually formed, and where this is not so, it may be taken to indicate molecular degradation. Flow in capillary tubes under a wide range of shear rates, and the shatter of jets under high transient stresses are discussed. Illustrations of drop formation and the shatter of jets are shown. A discussion is reported. C—**9.**

Settling Suspensions: Viscosity Measurement with a Rotational Viscometer. H. de Bruijn and P. G. Meerman. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 160-165; III, 55-56. (Publ. 1949.) The viscosity of settling suspensions has been measured by means of a Stormer rotational viscometer. The viscometer is calibrated with Newtonian liquids. Results show that the measured viscosity is dependent on the speed of rotation and also on the grain size. The influence of grain size is discussed and an explanation of the effect is offered. Limitations of rotational viscometers are mentioned. A brief discussion of the paper is reported. C—**9.**

Rubber Mixings: Plasticity Tests. ("A Note on the Discriminating Power of Plasticity Tests.") R. G. Newton, J. R. Scott and R. W. Whorlow. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 204-209; III, 61-62. (Publ. 1949.) The performances of six plasticity testers have been compared on samples of rubber subjected to various degrees of mastication. The results are analysed and a "coefficient of discrimination" is obtained for each tester. A brief discussion is reported. C—**9.**

Cellulose Xanthate Solutions: Measurement of Optical Relaxation Times. V. E. Gonsalves. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 239-246; III,

66-67. (Publ. 1949.) In an investigation of the streaming-double refraction of cellulose xanthate solutions, optical relaxation times have been measured. The apparatus used is described. Measurements have been made on four viscoses of different cellulose contents (12-15·5 per cent.). Results are expressed by plotting the time of relaxation against degree of polymerisation, viscosity and concentration. Only one relaxation time is measured; no complete explanation of this is available, but a mechanical analogy is considered to illustrate the phenomenon. The rheological behaviour of viscoses with high cellulose content (as the above) has been examined by means of a rotation pendulum viscometer. Results are summarised and a brief discussion is reported. C—9.

Rheology: Experimental Methods. F. R. Eirich. *Proc. 1st Internatl. Congress Rheology*, 1948, IV, 3-43. (Publ. 1949.) Rules and precautions in selecting experimental methods for rheological investigations are discussed. The use of models and macroscopic and molecular pictures of deformation are dealt with. A fairly extensive account is given of individual methods of rheological testing and their respective merits. There are 73 references. C—9.

Rheological Nomenclature: Principles. J. M. Burgers and G. W. Scott Blair. *Proc. 1st Internatl. Congress Rheology*, 1948, V, 1-72. (Publ. 1949.) A report by the Joint Committee on Rheology in which a critical survey of the whole field of rheological nomenclature is made. The first section deals with general terms, including elements of stress and strain analysis. The second section discusses the classification of forms of rheological behaviour according to results deduced from experiments in which the material is subjected to a uniform and constant shear stress. Applications of the terminology are considered in the final section and an appendix deals with the viscosity of solutions, and suspensions. C—9.

Direct-reading Photo-electric Spectrophotometer. T. B. Davenport. *J. Soc. Dyers & Col.*, 1950, **66**, 191-199. An illustrated account is given of the construction and operation of a non-recording photo-electric spectrophotometer suitable for reflectance measurements over the spectral range 4,000 to 6,500 A. The instrument is compact and accurate, operates from A.C. mains, and is simple to use. C—9.

Photoelectric Spectrophotometer. Hilger and Watts Ltd. *J. Sci. Instruments*, 1950, **27**, 109-110. Details are given of the Uvispek spectrophotometer. The instrument covers the visible and ultra-violet spectral regions for which purpose two lamps are provided. C—9.

Ratio-recording Double-beam Infra-red Spectrophotometer. Abraham Savitzky and R. S. Halford. *Rev. Sci. Instruments*, 1950, **21**, 203-212. An illustrated description is given of a simple method for converting a Perkin-Elmer infra-red spectrophotometer to double beam operation for direct recording of per cent. transmission at different wavelengths. A phase discrimination system is used, requiring no changes in the optical system, and no sacrifice of versatility or ease of prism interchange. A complete spectrum over the rock salt region may be obtained in 25 minutes with good resolution. Samples as small as 1 × 6 mm. can be studied. The system is readily adaptable to other spectrophotometers, including those in the visual and ultra-violet range, the only limitation being sufficiently rapid response by the detector. C—9.

Spectrophotometer: Effect of Slit Width on Accuracy. W. H. Eberhardt. *J. Optical Soc. America*, 1950, **40**, 172-176. A technique is suggested which allows an estimate to be made of the errors introduced into spectrophotometric measurements by the use of slits of finite width. The technique depends upon approximate analytic expressions for the slit function, the variation of the instrument sensitivity with wavelength, and the variation of the absorption coefficient with wavelength. Expressions are derived and applied to experimental data on solutions of benzene, oxyhæmoglobin, and neodymium chloride. C—9.

Fluorescence, Luminescence, and Phosphorescence: Theory and Applications. G. G. Taylor. *J. Soc. Dyers & Col.*, 1950, **66**, 181-186. The theory of fluorescence, luminescence, and phosphorescence is discussed briefly, and an account is given of non-textile and of textile applications. The properties of two commercial optical bleaching agents (Uvitex) are described as an example for the latter. C—9.

Rubber: "Light Stiffening". R. G. Newton and W. C. Wake. *J. Rubber Res.*, 1950, **19**, 9-16, 17-27. "Light stiffening" and "surface crazing" of rubber are described and defined and the connection between them is discussed. A simple method of measuring the former defect is described, and has been used in a survey of the influence of compounding ingredients, nature of exposure, and effect of different wavelengths of light on the light stiffening of thin proofings. The phenomenon is ascribed to a light-catalysed oxidation. The general mechanism of light stiffening is discussed. C—**9.**

Colour-constant Brightness Thresholds. S. O. Maizel. *J. Tech. Physics, U.S.S.R.*, 1947, **17**, 1253-1268 (through *Kodak Monthly Abstr. Bull.*, 1949, **35**, 169). Recent investigations of colour discrimination are criticised and rejected for reasons that have little significance in relation to the orders of magnitude and gradualness of change of the thresholds as functions of chromaticity. In place of all the data obtained since 1933, a scheme is based on a simple theory of colour vision for evaluating colour differences. The chromaticity diagram is covered with quadrilateral figures and the number of just-noticeable differences between any two chromaticities is to be determined by merely counting the number of quadrilaterals crossed by a straight line drawn between the two terminal chromaticities. Prediction of the Abney shift of hue with saturation is claimed. C—**9.**

Radio-active Isotopes: Applications in the Textile Industry. *Dyer*, 1950, **103**, 541-542. A brief account is given of the uses of radio-active isotopes for the continuous measurement of the thickness of a material, the measurement of the concentration of a particular component of a complex mixture, the elimination of static electricity, and the estimation of micro-quantities of material. C—**9.**

Radio-active Isotopes: Industrial Uses. ("Isotopes as Tools of Engineering.") P. C. Aebersold. *Mech. Engng.*, 1949, **71**, 987-990, 1031. Uses of radio-active isotopes in industry are discussed. Research techniques are indicated, such as simple tracer analysis, isotope dilution analysis, and activation analysis, and particular applications of the techniques to industrial problems are described. These include the study of solid diffusion, location of tungsten in an alloy, study of friction and wear, the flow of oil in pipe lines, radiographic testing (*e.g.* of welds and castings), and the measurement of thickness. C—**9.**

Radio-active Isotopes: Safe Handling. G. G. Manov and D. O. Lintz. *Mech. Engng.*, 1949, **71**, 991-998, 1030. Precautions and techniques for the safe handling of radio-active isotopes are discussed. The permissible dose of radiation which the human body can safely absorb is considered and methods of measuring and keeping check on it are outlined. Types of apparatus which are used for this purpose and for the measurement and detection of radiation in general are described and illustrated. Special techniques and equipment for the handling of radio-active materials (including remote control, shields and protective clothing) are dealt with. C—**9.**

Ultrasonic Tissue Disintegrator. F. F. Bird and K. S. Lion. *Rev. Sci. Instruments*, 1950, **21**, 189-190. A modified ultrasonic tissue disintegrator is briefly described and illustrated. The energy is transmitted from the crystal transducer by means of a laminated nickel rod to a diaphragm (acting as an impedance transformer). An aluminium rod attached to the diaphragm is in contact with the tissue contained in a small beaker. C—**9.**

Elasto-plastic Materials: Rheological Properties. K. Goldsmith. *Brit. J. Applied Physics*, 1950, **1**, 107-109. The flow properties of some elasto-plastic materials, such as certain gels and pastes, can be expressed by an empirical equation if the materials are subjected to a varying stress which is dependent on the shear. Three constants, derived from this equation, are a measure of these properties. C—**9.**

Polyethylene: Complex Stressing. I. L. Hopkins, W. O. Baker and J. B. Howard. *J. Applied Phys.*, 1950, **21**, 206-213. The effects of bi-axial tension on the stress/strain relationships of polyethylene are discussed. When bi-axial tension is applied some polymers show brittle fracture with less than 20 per cent. elongation at break, but if molecular weight is increased, such polyethylenes are orientated under complex stresses and usually elongate several hundred per cent. before rupture. Apparatus for complex stressing of sheets and tubes is described. Reasons for bi-axial brittleness and information obtained from X-ray

scattering measurements are discussed. The relation of degree of crystallinity to complex stressing, and the surface cracking of polymer films are also dealt with. C—9.

Polyisobutylene: Measurement of Mechanical Properties at Audio-frequencies. R. S. Marvin, E. R. Fitzgerald and J. D. Ferry. *J. Applied Phys.*, 1950, **21**, 197-203. An apparatus is described for measuring the dynamic viscosity and rigidity of soft rubbery solids in small oscillating deformations. A plate rigidly attached between two identical coils in two permanent magnets shears a pair of disc-shaped samples when a driving current is passed through one coil. The open circuit voltage from the other coil is compared in amplitude and phase with the driving current by a method in which all measurements are in the form of settings of a potential divider. Results of measurements on polyisobutylene are discussed. The dependence of the dynamic rigidity and viscosity of this polymer on temperature, molecular weight and frequency is considered. C—9.

Solids: Measurement of Young's Modulus and Internal Friction. ("Une nouvelle méthod de mesure du module d'Young et du frottement interne des solides.") A. Képès. *Proc. 1st Interntl. Congress Rheology*, 1948, IV, 66-72. An apparatus is described for the study of the elasticity modulus and the internal friction of solids. The measurements are based on the perfectly sinusoidal deformations which the elements of a circular cylinder are subjected to when acted upon by a twisting couple. Preliminary results obtained with this instrument on two samples of polyvinyl chloride of different origins are presented. C—9.

Stressed Dielectrics: Strain/Time Relations. W. Lethersich. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 280-285; III, 74-76. (Publ. 1949.) Methods available for the study of strain/time relations for hard materials when subjected to mechanical stress have been investigated. The torsion test is the most suitable for the study of the creep of dielectrics, especially when it is required to measure the creep a few milli seconds after applying the stress. A discussion of the paper is reported. C—9.

Stress-Strain Relations in Complicated Systems. M. Reiner. *Proc. 1st Interntl. Congress Rheology*, 1948, IV, 44-65. (Publ. 1949.) A "complicated" system is defined and the following complicating factors are discussed: (i) variability of rheological coefficients, (ii) the combination of fundamental properties, viscosity, elasticity and plasticity, in "series" or "parallel", and (iii) the fact that changes of volume are not only elastic. The possibility of volume flow as well as shear flow is emphasised. Other complicating factors include dilatancy, finite strain, and cross-elasticity. A concise notation for complicated models is introduced and several possible combinations are given. A brief discussion is reported. C—9.

Viscous Flow Transverse to a Circular Cylinder: Mathematical Expression. C. N. Davies. *Proc. Phys. Soc.*, 1950, **63B**, 288-296. Expressions for the flow field about a circular cylinder are derived which are valid for small values of the Reynold's number. C—9.

Visco-elastic Materials: Abnormalities under Stress. ("Abnormal Substances and Abnormal Phenomena of Flow.") K. Weissenberg. *Proc. 1st Interntl. Congress Rheology*, 1948, I, 29-46; III, 6-8. Many experiments are described, illustrated by photographs and diagrams, which demonstrate the difference in properties between general visco-elastic materials (for which part of a shear strain is recoverable when external forces are released) and special materials (for which this is not so). The principles upon which the author's theoretical explanation of these phenomena is based are outlined with full references to earlier work. A discussion of the paper is reported. Many of the illustrations are taken from the author's papers on the behaviour of textile fabrics under simple pulls. (*J. Textile Institute*, 1949, **40**, A248.) C—9.

Coarse- and Fine-grained Materials: Rheology and Constitution. S. M. Freeman and K. Weissenberg. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 12-14; III, 20-21. (Publ. 1949.) Rheological model experiments have been made on materials with structures of visible dimensions, in order to elucidate the invisible constitution of apparently continuous materials. In particular such materials as sponges and aggregates of fibres have been compared with certain sols and gels, both types showing a large power of shear strain recovery, and a close resemblance in those phenomena which depend upon shear properties. A

discrepancy, however, appears between the two types on account of their differences in compressibility. A brief discussion is reported. C—9.

Visco-elastic Media: Flow Optical Properties. V. R. Gray. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 23-31. (Publ. 1949.) The significance of certain results previously obtained by the author (1948) from flow optical studies in solutions of aluminium soaps in benzene (visco-elastic) is discussed for flow birefringence in rheological systems in general. The characteristics of flow birefringence in aluminium soap solutions are: (1) Initial birefringence; (2) An extinction angle, constant and not zero at high shears, but increasing at low shears; (3) An increase of double refraction with shear; (4) Non-Newtonian viscosity. A liquid under steady laminar flow is considered as subject to a system of permanent stresses in much the same way as in a photo-elastic solid. For liquids of more than one component the general case is one where the optic axis, the principal axis of strain, and the principal axis of stress all have different orientations relative to the streamline. Certain limiting cases which are often approached are discussed. It is concluded that the observed optic axis in pure liquids and in most viscoelastic systems is the principal axis of strain and generally also the principal axis of stress. The double refraction in a fibrillar liquid subjected to uniform shear is analysed mathematically, and a theoretical relation connecting extinction angle with shear is deduced. This is confirmed experimentally. The stress optical coefficient of some aluminium soaps is calculated. C—9.

Rheogoniometer: Application in Specification of Rheological Phenomena. K. Weissenberg. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 114-118; III, 40-42. (Publ. 1949.) The "Rheogoniometer" is an instrument that in its ideal form would yield a complete specification of rheological phenomena by measuring the distributions in space and time of the forces and displacements for all kind of materials. Satisfactory approximation to the ideal has been achieved by using as a rheogoniometer a motor-driven precision lathe with appropriate supplementary equipment. Various applications are described, including the use of the rheogoniometer for a comprehensive testing of the mechanical properties of materials. A discussion of the paper is reported. C—9.

Vulcanised Rubber: Subjective Judgment of "Firmness". R. Harper. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 122-128; III, 43-44. (Publ. 1949.) Investigations of human ability to assess orders of hardness have been carried out. Subjects were required to grade seven samples of vulcanised rubber according to "firmness" by comparing them in pairs; 270 judgments were made on each pair and these data were analysed by means of "probit analysis". The actual "firmness" of each sample was determined on a standard hardness tester. Results are presented and the weighted regression line showing the relationship between the probits and the objective criterion, is plotted. A brief discussion on the paper is reported. C—9.

Turbulent Flow through Tubes: Detecting Wall Effects. J. G. Oldroyd. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 130-134; III, 44-46. (Publ. 1949.) An attempt is made to extend arguments hitherto applied to turbulent flow of Newtonian liquids to non-Newtonian viscous liquids where anomalies of flow have been observed (by Toms[1]). A method of plotting experimental results is suggested by which a wall effect might be detected. The Reynolds number is derived on the basis of taking the viscosity at the highest rate of shear—*i.e.* at the wall—to characterise the viscosity of the fluid. It is suggested that one effect of the slip at the wall is to produce, sometimes, conditions where the addition of a solute results in an increased rate of flow for standard pressure gradients. This phenomenon has been observed by Toms.[1] A discussion of the paper is reported. ([1]See following abstract.) C—9.

Linear Polymer Solutions: Flow Through Straight Tubes. B. A. Toms. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 135-141; III, 47-52. (Publ. 1949.) Pressure gradient/rate of flow relations have been determined experimentally for the flow of solutions of polymethyl methacrylate in monochlorobenzene through straight tubes. The results are in line with Oldroyd's theory[1] of the wall effects at high Reynolds' numbers. In the discussion of the paper, however, it is submitted by another worker that the wall effect hypothesis is inadmissible. ([1]See previous abstract.) C—9.

Solutions of Large Molecules: Critical Reynolds' Numbers. Robert Schnurmann. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 142-151; III, 46-52. (Publ. 1949.) Experiments with the jet viscometer on liquids at high rates of shear show that the kinetic energy correction is smaller than for long capillaries with square ends. The effect of the shape of the nozzle at its entrance and exit was examined with a stainless steel nozzle. The critical Reynolds' number appears to be a function of the rate of shear and the shape and size of the molecules. In solutions containing elongated molecules the Reynolds' number appears to decrease with both length and concentration of the largest molecules. Certain oils, *e.g.* castor oil, show temporary decrease in viscosity with very high rates of shear. A discussion of the paper is reported. C—**9.**

Rigidity Meter: Application in Study of Rheological Properties of Natural Systems. ("Propriétés Rhéologiques de Quelques Ensembles Naturels.") V. Romanovsky. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 173-178. (Publ. 1949.) A "rigidity meter" is described which consists essentially of a steel torsion wire attached to a movable torsion head and carrying a metal cylinder at its lower end. The cylinder is immersed in the material under test and a twist is applied to the wire. The strain produced in the system is studied as a function of time and of stress. Systems such as agar agar, bentonite, quartz and limestone powders have been studied and used as standards for investigations on marine mud. The presence of air has a definite influence on the elastic behavious of the mud which exhibits a distinct yield value. C—**9.**

Non-vulcanised Rubber: Rheological Properties. G. G. H. Hamm and A. van Rossem. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 210-220; III, 62-64. (Publ. 1949.) An investigation of the rheological properties of rubbers (natural and synthetic) is reported and the rotational plastometer used is described and illustrated. The relation of shearing speed D and shearing stress τ, has been measured and some of the D/τ curves obtained are presented. Results are discussed. In the ensuing discussion a similar instrument is reported which yields values in a much wider range of rate of shear. C—**9.**

Lubricating Greases: Yield Stresses. J. F. T. Blott and W. P. Bonnor. *Proc. 1st Interntl. Congress Rheology*, 1948, II, 265-272; III, 71-72. (Publ. 1949.) Methods are described for measuring yield stresses in greases (*a*) by a plug flow method, and (*b*) by a torsion ring method. Lubricating greases show two well-defined yield stresses. With calcium soap greases the yield stresses increase slightly as the viscosity of the oil increases, and for a given oil they increase rapidly as the soap content increases. Two examples of irregular flow behaviour are described. A brief discussion is reported. C—**9.**

Aluminium-Beryllium Alloy for Substrate and Replica Preparations in Electron Microscopy. Wilbur Kaye. *J. Applied Phys.*, 1949, **20**, 1209-1214. A technique for the preparation of specimens for electron microscopy is described, in which an aluminium-beryllium alloy is used for the substrate. The alloy has a low scattering power, high strength, and a nearly amorphous structure. With a slight alteration the technique is applicable to the preparation of surface replicas. Micrographs are presented showing certain applications of the method which is best adapted to the study of polymer molecules and aggregates deposited from non-aqueous solutions. C—**9.**

RCA Model EMC Electron Microscope: Laboratory Modifications. S. G. Ellis. *Rev. Sci. Instruments*, 1950, **21**, 255-257. A brief account is given of some modifications which have been made in the RCA model EMC electron microscope, in order to improve its performance. The anode opening was reduced to reduce thermal expansion in the specimen stage. The assymmetry of the objective lens was compensated. By working at the lowest possible angular aperture of illumination and focussing critically a resolving power of approximately 50 A.V. was secured on suitable specimens. C—**9.**

Cellulose: Fine Structure. ("Über den Feinbau der Zellulose.") B. G. Rånby and E. Ribi. *Experientia*, 1950, **6**, 12-14. The frequency curves of many cellulose samples contain common maxima for degree of polymerisation values of 70-100 and 200. After strong degradation most of the cellulose accumulates at a D.P. of about 100. This tendency is shown to be caused by the crystallinity of the cellulose walls. The micelles (ordered regions) have been isolated as an aqueous colloidal solution, and in the electron microscope they

appear to be rod-like particles with a length of 500-600 A. and a width of 50-100 A. These results are in agreement with earlier X-ray investigations. Electron and X-ray diffraction studies have proved that the crystalline structure and the lattice dimensions of the isolated micelles are exactly the same as those of the fibre cellulose. After treatment with ultrasonic waves, an electron microscope study has demonstrated that the whole cellulose fibre is built up of elementary fibrils (micellar strings) of the same thickness as the micelles. C—**9.**

Cellulose Micelles: Preparation for Electron Microscopy. ("Zur elektronenmikroskopischen Präparation von Kolloiden.") E. Ribi and B. G. Rånby. *Experientia*, 1950, **6**, 27-28. In order to prevent the aggregation of hydrolysed cellulose on nitrocellulose supporting films, the membranes are made positive by deposition of a thin layer (a few A.) of a light metal, such Be or Al, that is oxidised by air. On such membranes, negative particles as cellulose sols are individually adsorbed without aggregation. Electron micrographs are shown. C—**9.**

International Temperature Scale—1948 Revision. J. A. Hall and C. R. Barber. *Brit. J. Applied Physics*, 1950, **1**, 81-86. An account is given of the "International Temperature Scale of 1948" which was adopted at the Ninth General Conference of Weights and Measures. The most important changes are: (1) the use of a value of 960·8° C. instead of 960·5 C. for the freezing point of silver; (2) the adoption of the Planck equation instead of that of Wien for extrapolation to high temperatures; (3) the use of a value of 1·438 instead of 1·432 for the constant C_2 in the Planck equation; (4) the use of the name "Celsius" instead of Centigrade. The effect of these changes on the numerical value of temperature is given in graphic form. The reproducibility of the scale is discussed and an estimate is made of the accuracy with which it represents the thermodynamic scale. C—**9.**

Dimethyl Terephthalate and Polyethylene Terephthalate: Magnetic Anisotropy. P. W. Selwood, J. A. Parodi and Anderson Pace. *J. Amer. Chem. Soc.*, 1950, **72**, 1269-1276. Principal magnetic susceptibilities have been determined (by the Gouy method) for crystalline dimethyl terephthalate and for polyethylene terephthalate. The anisotropy of the polymer has been studied as a function of mechanical treatment (draw-ratio), and as a function of temperature. Results are interpreted in terms of molecular orientations. C—**9.**

High Polymers: Ultrasonic Depolymerisation. ("Dépolymérisation sous l'action des ultrasons.") R. O. Prudhomme and P. Grabar. *J. Chimie Phys.*, 1949, **46**, 667-670. The ultrasonic depolymerisation of high polymers (polystyrene and carboxymethylcellulose) has been followed by viscometric measurements on the solutions. Ultrasonic depolymerisation appears to be linked with cavitation. Polymers of the same chemical composition but of widely differing molecular weights are broken down by the ultrasonic waves to the same molecular weight, *i.e.* same chain-length. The chemical actions of the ultrasonic waves do not enter into this process. C—**9.**

X-Ray Diffraction Camera: Adaptation for Reflection Patterns. Jonathan Parsons. *Rev. Sci. Instruments*, 1950, **21**, 185-186. A commercial X-ray diffraction powder camera, taking rod or tubular mounts, has been adapted to take small, flat mounts. The necessary modifications are described and include changing the usual continuous rotation to a rotary oscillation. A diffraction pattern obtained with the modified camera is shown. C—**9.**

X-Ray Spectrograph: Collimation Error in Small-angle X-Ray Scattering. K. L. Yudowitch. *J. Applied Phys.*, 1949, **20**, 1232-1235. Three experimental arrangements for the determination of collimation errors in small angle X-ray scattering are considered that use (*a*) curved crystal reflector, (*b*) plane crystal reflector, (*c*) two equal slits. In each case an expression for the collimating error is derived and an extension of the theory the case of two unequal slits is treated. C—**9.**

Colloidal Electrolytes: X-Ray Long Spacing; Effect of Added Electrolytes. O. A. Hoffman. *J. Phys. & Colloid Chem.*, 1950, **54**, 421-425. The effects of added electrolytes on the X-ray long spacings of moderately concentrated solutions of potassium laurate and cetylpyridinium chloride have been studied. Dilute solutions of electrolytes decrease the spacing, but further addition of salts causes a marked increase. Theory does not account for this effect. C—**9.**

Quality Control Charts: Application. ("Bedrijfs-en kwaliteitscontróle met behulp van contrôlekaarten.") W. Werker. *Vezelinstituut T.N.O. Pamflet*, No. 15, 11 pp. (reprint from *De Tex.*, 1949, **8**, 278-282). The use of control charts for the statistical control of production and quality is discussed and illustrated with reference to the textile industry. C—**9.**

Wool Degradation: Phenomena; Conclusions from Experiments on Used Wool Fabrics, with an Appendix of Comments on Suggested Methods for the Prevention of Degradation. J. B. Puig. *Anales invest. textil (Barcelona)*, 1949, **1**, 51-72 (through *Chem. Abstr.*, 1950, **44**, 2248[b]). Mechanical causes initiate the breakdown of the wool fibres in a garment, and this is followed by microbic action in certain areas. A large variety of proteolytic microbes (*Bacillus subtilis, alcaligenes, mesentericus, megatherium,* and *mycoides; Proteus vulgaris; Pseudomonas pyocyanea,* and *fluorescens; Streptococcus; Staphylococcus; Actinomyces, etc.*) were obtained from highly worn areas of old clothes. The conditions of growth of these microbes are discussed. Wool treatments with calcium thioglycollate and methylene dichloride, melamine formaldehyde, benzoquinone, mercury or chromium salts, anhydrocarboxyglycine, active monomers, alkylnaphthalene sulphonic acids, or with preservatives are briefly discussed. W—**9.**

Emulsion Reactions: The Hydrolysis of Wool Wax. J. L. Horner and E. V. Truter. *Nature*, 1950, **165**, 771. Wool wax is hydrolysed with great difficulty as an oil-in-water emulsion, only 4 per cent. reaction being obtained after boiling with N/2 sodium hydroxide for 100 hours. In a water-in-oil emulsion hydrolysis proceeds much more rapidly and is complete in 6 hours at 100° C. when 1 g. of wax is treated with 1 ml. of 6N sodium hydroxide. The difference in reaction rates is determined mainly by changes in the nature of the interface and the effect of reaction products on it. W—**9.**

Wool Alcohols. (I) Changes in Properties as a Result of Oxidation. G. S. Muirhead, K. H. Oberweger, D. E. Seymour and D. Simmonite. *J. Pharm. Pharmacol.*, 1949, **1**, 762-773 (through *Chem. Abstr.*, 1950, **44**, 1231[a]). Oxidation of wool alcohols (total unsaponifiable fraction of lanolin) causes a rise in acid and saponification values and a decrease in acetyl value and cholesterol content. No appreciable change is noted in interfacial tension-reducing power of total wool alcohols and some isolated fractions by the pendant drop method. Wool alcohol water-in-oil emulsions "crack" on storage with a coincident rise in acid value of the oil phase. Both effects are retarded by inclusion of antioxidants, *e.g.* pyrogallol, α-tocopherol. The diminished efficiency of wool alcohol as an emulgent is attributed to loss of solubility of the oxidised material in the hydrocarbon phase of the emulsion. W—**9.**

Wool: Action of Oxidising Agents. (I) The Division of Cystine into Two Fractions of Widely Differing Reactivities. P. Alexander, R. F. Hudson and M. Fox. *Biochem. J.*, 1950, **46**, 27-32. The reaction of the cystine in wool with various oxidising agents has been studied. Chlorine, hypochlorous acid and peracetic acid can oxidise all the wool cystine, while acid permanganate and alkaline hypochlorite can oxidise only 25 per cent. Possible explanations for the differences in reactivity of the two cystine fractions are discussed. These cannot be ascribed to morphological causes, since the cystine of modified wool and powdered horn shows the same division. W—**9.**

PATENT

Amino-polymethylene-aliphatic Amides: Production. Algemeene Kunstzijde Unie N.V. B.P.629,534 of 23/7/1946: 22/9/1949 (Conv. 13/11/1945). In the dehydration linear condensation of diamides of the dicarboxylic acids (*e.g.* adipic acid diamide) to form dinitriles it has been observed that the reaction first proceeds mainly at one end of the chain, so that by stopping when little more than half the theoretical amount of water has been eliminated the product is the mono-nitrile, mono-amide, $CN\cdot(CH_2)_n\cdot CONH_2$. By catalytic hydrogenation this leads to the aminopolymethylene-amide, $NH_2(CH_2)_{n+1}\cdot CONH_2$. C.

10—ECONOMICS

British Cotton Industry: Output and Employment, January and February, 1950. *Board of Trade J.*, 1950, **158**, 536-537; 770-771. Figures for cotton yarn and cloth production, employment and machine activity are presented for

January and February, 1950. Production of yarn and cloth during February was bigger than in January, although working days were fewer. C—10.

Textile Machinery: Economic Survey. ("Engineering Outlook" XI.) *Engineering*, 1950, **169**, 288-291. This survey of the British textile machinery industry deals with supply and demand, developments, employment and exports. Current data on numbers employed in the industry, value of deliveries, and exports (by machinery groups and by countries) are tabulated. C—10.

Textile Mill Cost-finding Chart. ("The Basis of Useful Costing.") S. C. Roberts. *Textile Weekly*, 1950, **45**, 1060-1073, 1128-1130. A report of a Conference paper and discussion. The author pleads for rigorous "stock taking" of the system of costing operated by a mill, so that only really useful data are collected and the clerical work does not become a burden. He presents a "cost-finding chart" on which expenditure is analysed into the "elements" of labour, material and overhead expenses. The chart indicates the corresponding sources of information and their routine collection, and also how the accounting department might then analyse the data so as to arrive at the costs of the firm's products. C—10.

Textile Wholesale Prices, March, 1950. *Board of Trade J.*, 1950, **158**, 720-721. The index numbers for March, 1950, are: Cotton 369·2; Wool 395·0; Other textiles 185·6; All articles 245·5. All these indices are somewhat higher than those for the previous month. C—10.

British Cotton Industry: Output and Employment, First Quarter, 1950. *Board of Trade J.*, 1950, **158**, 982-983. Figures are given for cotton yarn and cloth production, employment and machine activity for March, 1950, and preceding months. Production in all sections of the industry was higher during the first quarter of 1950 than in the previous quarter. Production of cotton, spun rayon and mixture yarns was a post-war record. C—10.

Canadian Cotton Textile Industry: Development. G. R. Poley. *Times Rev. Industry*, 1950, **4**, March, 68. The development of the cotton textile industry in Canada, from the establishment of the first mill in 1845 to the present day, is outlined briefly. The industry now employs 22,000 men and women in 44 mills, located mainly in the provinces of Ontario and Quebec. C—10.

Chinese Textile Industry: Development. *Times Rev. Industry*, 1950, **4**, March, 83-84. A brief review is given of the growth of the Chinese textile industry (cotton, wool, jute, hemp, ramie and silk), with statistics of production. The industrial potential of China and the estimated capacity of the Chinese textile industries are compared with those of Britain and the U.S.A. The production of textile machinery in China is mentioned. C—10.

Indian Cotton Mill Industry: Locational Trends Between 1911 and 1948. M. M. Mehta. *Indian Textile J.*, 1950, **60**, 424-425. An analytical study has been made of the locational trends in the cotton mill industry of India between 1911 and 1948. The predominant position of Bombay has declined during the last thirty years. C—10.

Japanese Silk Industry: Restoration. ("Japan's Post-War Silk Industry.") W. A. Dana. *Rayon and Synthetic Textiles*, 1950, **31**, No. 4, 43-44. Efforts being made to restore the silk industry in Japan include the development of new strains of silkworms, research, incentives for producers and the introduction of new machinery. Some figures are given for the present production of silk in Japan and comment is made on the future prospects. C—10.

Rayon: World Production and Consumption. J. G. Oliver. *Silk and Rayon*, 1950, **24**, 442-448. Facts and figures are presented for the world production and consumption of rayon during the 1948-49 period. Tables give world figures in general and British and United States figures in greater detail. Figures are also given for British exports of flat filament rayon yarn, imports by the Irish Republic, British exports of rayon fabrics and British exports and imports of nylon hose. A statistical survey of the data is made. C—10.

Textile Wholesale Prices, April, 1950. ("Wholesale Price Index Numbers.") *Board of Trade J.*, 1950, **158**, 984-985. The index numbers for April, 1950, are: Cotton 371·5; Wool, 409·9; Other textiles, 187·0; All articles, 249·8. Percentage changes from the March 1950 and April 1949 figures are shown. All prices were higher in April; the biggest increase, 3·7 per cent., was in the wool index. C—10.

11—INDUSTRIAL WELFARE, INDUSTRIAL PSYCHOLOGY AND EDUCATION

Khaki Clothing: Relation to Textile Dermatitis. G. A. G. Peterkin. *Arch. Derm. Syph.*, 1948, **58**, 249-264 (through *Brit. Abstr.*, 1950, A III, 155). In 64 cases of dermatitis due to men's clothing within two years, 52 were ascribed to khaki garments. Early diagnosis is important, for chronic weeping eczema or circumscribed neurodermatitis may arise. C—**11.**

Franklin Institute: Activities. Thomas Coulson. *J. Franklin Institute*, 1950, **249**, 1-48. An illustrated description is given of the activities of the Franklin Institute of Philadelphia from 1824 to 1949. C—**11.**

Ghent University Textile Laboratory. ("Le laboratoire textile de l'Université de Gand.") D. de Meulemeester. *Textielwezen*, 1949, **5**, No. 9, 43-45, 47-48. An illustrated description is given of the textile laboratory of Ghent University, and of work carried out there on the hygroscopicity of textile materials, influence of humidity on resistance and elasticity, sampling, and on air-conditioning. A brief account is also given of the test procedures and instruments employed. C—**11.**

Cuprammonium Rayon Factory Workers: Prevention of Ulcerations by Sulphuric Acid. E. Zanetti. *Med. d. Lavoro*, 1949, **40**, 139-145 (through *Bull. Hygiene*, 1950, **25**, 49). Skin lesions caused by the 3 per cent. sulphuric acid solution used in the cuprammonium process of rayon production are classified into three types. A barrier cream of the "water insoluble" type has been used successfully for healing the lesions and improving the texture of the skin. C—**11.**

Glass Wool Dermatitis. J. M. T. Bona. *Actas Dermo-sif.*, 1949, **40**, 629 (through *Brit. J. Industr. Med.*, 1950, **7**, 57). Contact with glass-wool generally produces an itchy erythematous small papular eruption of follicular distribution on the hands, fore-arms, and neck, and seldom on covered parts. Minute fragments of glass fibre can be seen with a magnifying glass. The condition is usually unimportant, but secondary infection and pustulation may occur. In 36 out of 42 cases studied by the author, pulp infections of the tips of the thumbs and the index and middle fingers were discovered. C—**11.**

Industrial Dusts: Health Hazard. C. Bruzzone. *Rass. Med. Indust.*, 1949, **18**, 49-57 (through *Bull. Hygiene*, 1950, **25**, 42). In a survey of the industrial conditions in which the nasal passages are liable to sustain injury by dust or fumes some references are made to the textile industry. Epistaxis and changes in nasal mucous membrane have been observed among cotton workers. In Russia, lesions among spinners were attributed to the drying effect of the dust. Hemp causes mechanical injury and may lead to asthma. Flax causes at first active irritation and later hyposmia. Measures for prevention are discussed. C—**11.**

Spinning Frame Doffers: Productivity. ("Workable Incentive Plan for Doffers.") R. A. Butler and C. H. Peterson. *Textile Industries*, 1950, **114**, No. 3, 87-91. A successful incentive plan for doffers in an American mill combines the "pay by the doff" and "pay by the hank" systems. An automatic hank counter developed by the Institute of Textile Technology, which is used in conjunction with the system, is described and illustrated. C—**11.**

Textile Operatives: Effect of Music on Output. ("Le travail en musique.") A. Lambrette. *Revue Textile*, 1950, **48**, No. 1, 2-4. The effect of music on the work of textile operatives is discussed. Whereas well-chosen music may increase output, music with an unsuitable rhythm may have the opposite effect. The value of music as a means of preventing talking among operatives is also considered doubtful. C—**11.**

Textile Operatives: Vision Testing. ("Good Vision is Necessary for Efficient Production.") J. G. Shadow. *Textile World*, 1950, **100**, No. 4, 143-145, 228, 230. A brief account is given of a vision testing programme carried out on the personnel of an American textile mill. About 20 per cent. of the workers had defective vision for their jobs. Correction of visual defects improved production. C—**11.**

Textile Technologists and Operatives: Training. ("L'enseignement technique textile à travers le monde.") Norrie Ward, A. Helle-Saux and —. Godol. *Revue Textile*, 1950, **48**, No. 1, 4-11. Brief accounts are given of (i) the training available in Great Britain for textile operatives, foremen, and textile technolo-

gists, (ii) the training of weavers in Belgium, and (iii) textile training in Germany, with particular reference to the programme suggested by Walter Schulze for weaving apprentices. C—**11.**

Ahmedabad Textile Industry's Research Association: Organisation. ("Research for the Textile Industry.") V. A. Sarabhai. *Indian Textile J.*, 1950, **60**, 397-399, 413. The organisation of research for the Indian textile industry is discussed, with particular reference to the creation of the Ahmedabad Textile Industry's Research Association. It is suggested that regional laboratories should be established on the lines of the A.T.I.R.A. and that a National Board of Research should co-ordinate their activities. C—**11.**

12—CONFERENCES AND EXHIBITIONS

Italian Textiles and Machinery at the Milan Fair. ("L'industrie textile italienne à la foire de Milan.") *Textielwezen*, 1950, **6**, No. 1, 51-55. A brief illustrated account is given of Italian textile fabrics and machinery exhibited at the Milan Fair. C—**12.**

Physical Society Exhibition. *Instrument Practice*, 1950, **4**, 237-249, 349-362. An illustrated list is given of exhibitors and exhibits at the Physical Society Exhibition (March 31st-April 5th, 1950). C—**12.**

Southport Conference, 1950. National Federation of Textile Works Managers' Associations. *Textile Weekly*, 1950, **45**, 964-1008, 1044-1090, 1122-1144, 1200-1212; *Textile Mercury & Argus*, 1950, **122**, 623-628, 658, 696-698. Reports are given of a conference on problems of management concerned with people, prices, production, quality and quantity. The following papers were read and discussed. (1) Efficiency as a Factor in Social Progress, by L. C. Ord; (2) Direct-spun *v* Rewound Weft, by A. Ormerod*; (3) Quality in Yarns and Cloth, by W. T. Shackleton; (4) The Basis of Useful Costing, by S. C. Roberts*; (5) Quality in Textiles, the Contribution of the Finisher, by J. G. Evans. (Papers marked * are abstracted elsewhere in these Abstracts.) C—**12.**

Textile Mill Maintenance Equipment Exhibition. *Textile World*, 1950, **100**, 114-115. Equipment of textile interest exhibited at the first Plant Maintenance Show in Cleveland, Ohio, is illustrated. It includes floor sweepers and scrubbers, a centralised-lubrication system, vibration-damping pads and light-weight fire doors. C—**12.**

American Army Plastic Fabrics and Coated Fabrics: Development. ("U.S. Services Report on Plastics.") *Brit. Plastics*, 1950, **22**, 141-147. Papers read at a recent Plastics Seminar in Washington by representatives of the American Armed Services on the progress being made in solving technical problems with the aid of plastics are summarized. The topics covered include the effect of micro-organisms on plasticisers for vinyl resins, response of coated fabrics to extremes of temperature, and the construction of airfield landing mats. C—**12.**

Wool Fibre: Reclamation in the Shoddy and Mungo Trades. Textile Institute. *Textile Mercury & Argus*, 1945, **122**, 668-676, 698, 726-734. A report of a conference at Morley on April 18th, 1950, on problems of wool reclamation from rags and wastes, especially those created by artificial fibres in the materials. C—**12.**

British Textile Laboratories and Mills. ("Mission en Angleterre-Irlande.") Institut Textile de France. *Bull. Institut Textile France*, 1950, No. 16, 15-137. A report is presented of visits to fifteen textile mills and laboratories in Great Britain carried out by a delegation of the French Textile Institute in May, 1949. Reports are included of conferences with British workers. C—**12.**

Textile Laboratories, Machinery Makers, and Mills in the United States. ("Deuxième mission de l'I.T.F. aux U.S.A.") Institut Textile de France. *Bull. Institut Textile France*, 1950, No. 16, 139-210. An account is given of textile laboratories, teaching establishments, machinery makers, and mills in the United States, which were visited by a delegation of the French Textile Institute in April and May, 1949. C—**12.**